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REVIEW OF
NEUROLOGY AND PSYCHIATRY

REVIEW
OF
NEUROLOGY AND PSYCHIATRY

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Review
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Original Articles

THE BACTERIOLOGY OF THE CEREBRO-SPINAL FLUID IN GENERAL PARALYSIS OF THE INSANE. (With Four Figures.)

By W. FORD ROBERTSON, M.D.,

AND

R. DODS BROWN, M.D., M.R.C.P. (Edin.), D.P.H.

In recent years very numerous observers have endeavoured to ascertain if, in cases of general paralysis, micro-organisms can be demonstrated in the cerebro-spinal fluid withdrawn by means of lumbar puncture during life. All, with one or two exceptions, have obtained negative results, both from direct examination of the centrifuge deposit and from cultures, and the very general conclusion has consequently been formed that no micro-organisms are present.

The positive results that have been obtained are extremely few in number. In 1897 Montesano and Montessori[1] made cultures from the cerebro-spinal fluid of 11 cases of general paralysis and obtained positive results in 8. Among the micro-organisms obtained were streptococci, staphylococci, sarcinæ, and a bacillus which they termed the *bacillus viscosus.* They were unable to observe any micro-organisms in films of the centrifuge deposit.

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[1] *Riv. di Psicol., Psichiat., Neuropatologia, etc.*, 1897, Vol. i., f. 15.

More than two years ago Dr Douglas M'Rae and one of us stated that we had obtained pure cultures of a diphtheroid bacillus from the cerebro-spinal fluid in 2 cases of general paralysis during congestive attacks. In 13 other cases of the same disease no such growth was obtained, although in several instances, including the 2 cases in which there were growths, diphtheroid bacilli were observed in stained films prepared from the centrifuge deposit. In 1907 Dr George M. Robertson[1] recorded that Dr Winifred Muirhead had obtained a culture of a diphtheroid bacillus from the cerebro-spinal fluid during life in 4 cases of general paralysis. He stated that it was not identical with the *bacillus paralyticans*, but he had in his possession for purposes of comparison only vigorously growing strains of these micro-organisms. A culture of one of the bacilli isolated at Larbert was kindly supplied by Dr Muirhead, and it was found, on examination in the Laboratory of the Scottish Asylums, to have the cultural and morphological characters and bio-chemical reactions of the feeble-growing type of the *bacillus paralyticans longus*. In a recent paper Dr J. D. O'Brien[2] has stated that from the cerebro-spinal fluid of 62 cases of paresis he has isolated the *bacillus paralyticans* in 70 per cent., whilst in all of 30 cases of other forms of insanity the cultural results were negative.

The new observations, the results of which we wish now to record, have been made upon 20 general paralytics and 10 cases of other forms of insanity. In all of these the cerebro-spinal fluid has been obtained by lumbar puncture. Cultures have been made both from the centrifuge deposit and from the fluid, and films of the centrifuge deposit have been examined for the presence of micro-organisms.

In studying films of the centrifuge deposits we have employed staining methods that serve for the detection of diphtheroid organisms, such as deep staining with Löffler's methylene blue and various modifications of Neisser's methylene blue and vesuvin brown method. The examination of films of the deposit obtained from the 10 control cases has proved conclusively that it is in general futile to attempt to distinguish in such films any bacteria that have undergone a marked degree of lysogenic change, for there is almost constantly to be observed a certain amount of granular debris that tends to stain with aniline dyes, presenting appearances often indistinguishable from those assumed by various disintegrating micro-organisms. It is perhaps not unnecessary to inform the critics in advance that we are well aware of this fact. We have regarded no bodies as micro-organisms excepting such as clearly present the structural characters of well-known bacteria.

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[1] *Journ. Ment. Science*, 1907, p. 609; *Brit. Med. Journ.*, Sept. 28, 1907.

[2] *Am. Journ. of Insanity*, July 1908.

In all of the 10 control cases, none of which presented any lymphocytosis, the centrifuge deposit appears to be free from micro-organisms. In the 20 cases of general paralysis the results have been very different. In 12 of them diphtheroid bacilli can be observed either lying free or in the interior of phagocytic cells. In the direct films from most of these the bacilli that can be clearly distinguished are extremely few in number, and prolonged search has been necessary in order to find them. In one case, however, they are abundant, as many as from five to ten being often visible in a single field under an oil-immersion lens. The patient from whom this material was obtained was at the commencement of a severe congestive attack. In another case in which diphtheroid bacilli can be demonstrated some diplococci can also be observed. That these are actually diplococci seems to be borne out by the fact that a culture of an organism morphologically identical (a Gram-fast diplococcus) was obtained from the cerebro-spinal fluid.

As culture media we have used chiefly blood films upon glucose agar and glucose broths. Tubes of cerebro-spinal fluid have also been incubated, either with or without the addition of human blood serum. We have not been constantly fortunate in avoiding what would appear to have been contaminations, and it is necessary to consider for a moment here what are the possible sources of contamination in making cultures from the cerebro-spinal fluid of an asylum patient. The skin is a possible source of extraneous micro-organisms, but in the majority of our cases we have made cultures from the spot about to be punctured and have never obtained any growth. It therefore seems unlikely that the skin has been a frequent source of contamination, though this cannot be altogether excluded. It seems to us much more probable that the unavoidable exposure of the centrifuge tubes for several minutes to the air of the asylum ward in which we have to make our lumbar punctures is the explanation of the occasional growths that we are obliged to regard as contaminations. In 12 tubes out of over 300 we have obtained pure growths, which were in all probability of such origin. We have not regarded any micro-organism obtained in culture as having been derived from the cerebro-spinal fluid unless an organism morphologically identical is clearly demonstrable in the corresponding centrifuge deposit.

We have obtained a growth of a diphtheroid bacillus from 4 out of the 20 cases of general paralysis examined. In all of these 4 cases a similar bacillus has been observed in considerable numbers in the direct films. Three of the patients were suffering from congestive attacks from which they have now recovered, whilst the fourth was in a very advanced stage of the disease and has since died. Three of these micro-organisms give the biochemical reactions of the *bacillus paralyticans longus* and the fourth those of the *bacillus paralyticans brevis.* The case in which the direct films show very numerous diphtheroid bacilli was one of those which yielded a growth of the former organism, but it did so only upon a second examination when the diphtheroid bacilli in direct films were less numerous. The first cultures were made only upon ordinary glucose agar and all remained sterile. On the second examination, in addition to a diphtheroid bacillus, growths of the *micrococcus tetragenus* and of a staphylococcus were obtained, but these two organisms have not been recognised in the direct films, and therefore their development must be provisionally regarded as due to contamination. In the second case the same three organisms were obtained, and the direct films show, in addition to the bacillus, a staphylococcus like that grown. In the third and fourth cases the diphtheroid was the only organism obtained. It is to be noted that all of these organisms developed as pure growths. In the instances in which they grew on a solid medium they appeared as a single, minute colony. Two of the diphtheroid bacilli were grown upon blood films, one upon a simple glucose agar medium, and the fourth (the *brevis* organism) developed in a tube of centrifuged fluid to which a drop of human blood serum had been added. In making these cultures upon solid media, we always heat the upper end of the tube and dip the cotton wool plug in melted hard paraffin before inserting it. It has been definitely proved that many strains of the *bacillus paralyticans longus* will die out in surface cultures in a few days if the air is not excluded in this way, and it is therefore not improbable that our few successes in obtaining growths of these bacilli from the cerebro-spinal fluid have been in part due to the adoption of this plan.

All of the three bacilli of the *longus* type are feeble growers. None of them have shown any marked virulence to mice or guinea pigs. One of four mice injected with 1 c.c. of a broth culture of the first bacillus isolated died on the ninth day. Some months ago a bacillus identical in morphological character and bio-chemical reactions, but differing in respect of its greater vigour of growth, was obtained from the genital tract of the same patient, and 1 c.c. of broth culture injected into each of two mice proved fatal to both within twenty-four hours. It has been our experience that the most virulent strains of these bacilli are those derived from the genital tract.

These and similar previous observations, including those of Dr O'Brien, seem to us to justify the conclusion that diphtheroid bacilli are frequently present in the cerebro-spinal fluid in cases of general paralysis at all stages of the disease, but especially during congestive seizures. If this conclusion is admitted the question naturally arises, What is the source of these micro-organisms? Regarding this problem a considerable amount of light has already been obtained.[1] In the general paralytic there appears to be constantly a well-marked chronic morbid condition of the naso-pharyngeal tissues. Of this there is clinical, bacteriological, and histological evidence. The histological evidence is very striking. In several cases we have now observed invasion of the deep nasal lymphatics by diphtheroid bacilli showing metachromatic granules. The sections also show that there is a more or less distinct sclerosis of the submucous tissues. Now the deep lymphatics of the nose communicate with the intra-cranial and lymphatic system. Normally the flow is from the subdural space to the surrounding venous sinuses and lymphatic channels of the dura. If, however, in consequence of a morbid process, such as the sclerosis that occurs in these cases, the lymphatic channels of the nose become obstructed, it is easy to understand that the extra-cranial lymph pressure at the base of the skull may be raised and that there may thus be a local reversal of the flow and the passage of the lymph into the intracranial cavity. If it can be proved that this actually occurs in connection with an infective focus, then the phenomena of general paralysis can be explained as a consequence of an intra-cranial deviation of the flow of a toxic nasal lymph. This hypothesis is one that is still in process of being tested, but it certainly harmonizes in a very remarkable way with facts already ascertained. Congestive attacks are commonly accompanied by engorgement of the nasal mucosa and the development of great numbers of diphtheroid bacilli and other bacteria in the nasal secretion. If such a surface multiplication of micro-organisms is associated with a corresponding increase in the invasion of the nasal tissues—and there are sufficient grounds for believing that it is so—then the toxic cerebral phenomena, the extreme degree of lymphocytosis and the marked leucocytosis of the cerebro-spinal fluid, as well as the presence of dissolving diphtheroid bacilli in this fluid, would be satisfactorily explained. As we have already suggested elsewhere,[1] the part played by syphilis may very well be merely that of damaging the nasal mucosa in such a way that it is readily attacked by certain forms of pathogenic micro-organisms. There is at least strong evidence that such a local bacterial attack occurs in general paralysis and that certain species of diphtheroid bacilli play an important part in the morbid process. If diphtheroid bacilli are thus capable of invading, there is no reason why certain other micro-organisms which have established themselves secondarily in the infective focus should not occasionally also gain access to the lymphatics, although we have not yet obtained any clear histological demonstration of deep invasion by them. If the posterior lymphatics of the nose are obstructed, any micro-organisms reaching these lymphatics may quite well be carried to the intracranial lymphatic system. It seems to us possible that some at least of the bacteria that we have been content to regard as due to contaminations from the air of the asylum wards were really derived from the cerebro-spinal fluid, to which they had gained access from the nose. This might quite well apply to the *micrococcus tetragenus* that has twice appeared in

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[1] *The Lancet*, Nov. 14, 1908.

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[1] *The Lancet*, Nov. 14, 1908.

PLATE 1.

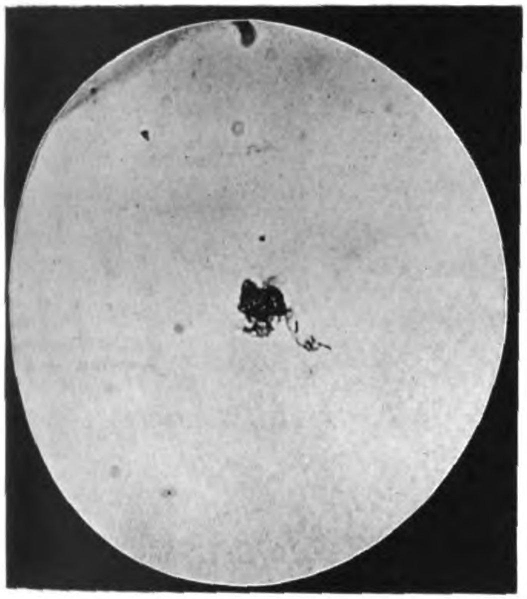


FIG. 1.

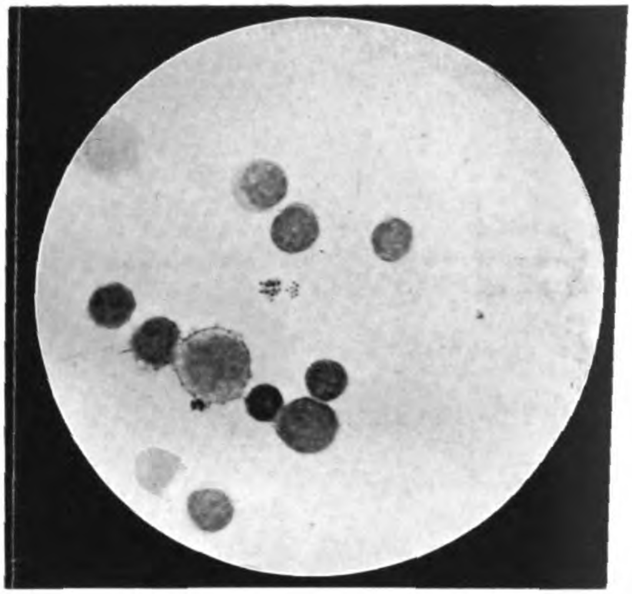


FIG. 2.

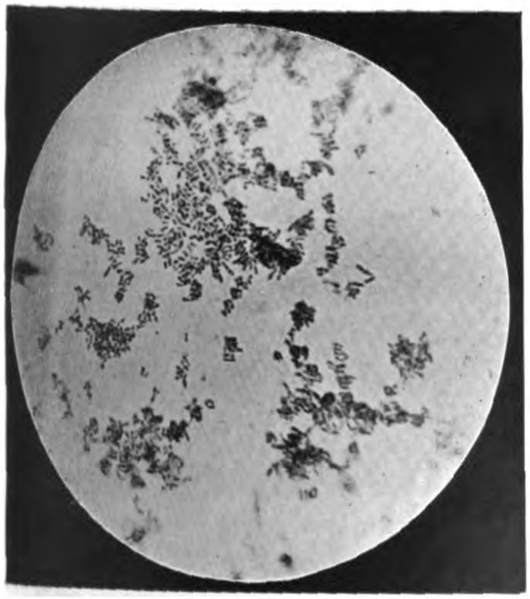


FIG. 3.

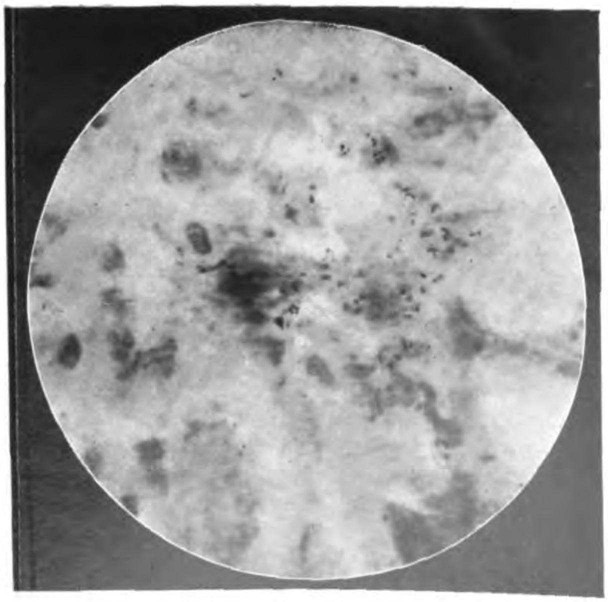


FIG. 4.

To illustrate Dr Ford Robertson's Paper.

our cultures, and also to the staphylococci obtained in four other cases. This hypothesis of the intracranial deviation of a toxic lymph flow would also serve to explain why it is so difficult to obtain growths of micro-organisms from the cerebro-spinal fluid, even in cases in which their presence can be demonstrated. Micro-organisms of low virulence entering the lymphatics of the nose and tending to be carried on to the intracranial lymphatic system would be rapidly destroyed by the endothelial cells, with the occasional aid of polymorphonuclear leucocytes. Indeed, a high degree of local immunity would tend to be established, so that, beyond the local infective focus, in which there must be a complete breakdown of the defensive forces, there would be a very rapid dissolution of any invading bacteria. A more or less constant inflow of toxic lymph would determine the ordinary lymphocytosis of the cerebro-spinal fluid, and an exacerbation of the nasal infection, with consequent increase in the toxicity of the lymph, would account for the phenomena of an ordinary congestive attack.

DESCRIPTION OF FIGURES.

Fig. 1.—Centrifuge deposit from cerebro-spinal fluid of a general paralytic who was in a congestive attack. Film stained by Neisser's method. Shows a group of diphtheroid bacilli in the vicinity of a lymphocyte. (x 800.)

Fig. 2.—Centrifuge deposit from the cerebro-spinal fluid from another case of general paralysis in a congestive attack. Film stained with Löffler's methylene blue and vesuvin brown. Shows group of diphtheroid bacilli. (x 800.)

Fig. 3.—Film prepared from pure culture of *bacillus paralyticans longus* obtained from cerebro-spinal fluid of a general paralytic. Neisser's method. (x 800.)

Fig. 4.—Section of inferior turbinal body from a case of general paralysis. Löffler's methylene blue. Shows invasion of nasal lymphatics by diphtheroid bacilli. (x 800.)

NOTE OF A CASE OF POSTERIOR BASIC MENINGITIS TREATED WITH RUPPEL'S SERUM. RECOVERY.

By J. S. FOWLER, M.D., F.R.C.P.E.

NINA K., aged $4\frac{1}{12}$, was admitted to the Sick Children's Hospital on September 16, 1908, with the following history:—She has always been a nervous, excitable child, but was in good health until a month ago, when she suddenly woke up at night screaming with pain in the head. She has had similar attacks almost every night since; they come on after she has been asleep for three or four hours, and last for an hour or more. She is always thirsty, and complains of pain in the neck and head; she sits holding the chin steady with her hand during the attacks. A few days after the first attack of pain the child had a bad rigor, and has been confined to bed ever since. She has been feverish, and has vomited from time to time. She complains of pain in head only at night, and no stiffness of the neck or head retraction has been noticed. There have been no further symptoms, but as the child was not improving, and was getting thinner, her doctor ordered her removal to hospital.

On admission she was thin, pale, and looked ill. She is so excitable that examination was a matter of some difficulty. Nothing of importance was made out in the digestive, respiratory, or circulatory systems. The glands on the neck were slightly enlarged.

The spine appeared normal, except for slight stiffness of the neck on trying to bend the head forward. When the child is left alone she does not complain much, but movement of the head is painful. The knee jerks are very active; plantar reflex flexor; slight Kernig on the left side. Pupils equal; react normally; no squint.

Urine is acid, contains a trace of albumin, and numerous b. coli.

Spleen not palpable; leucocytes 27,200; polynuclear leucocytosis.

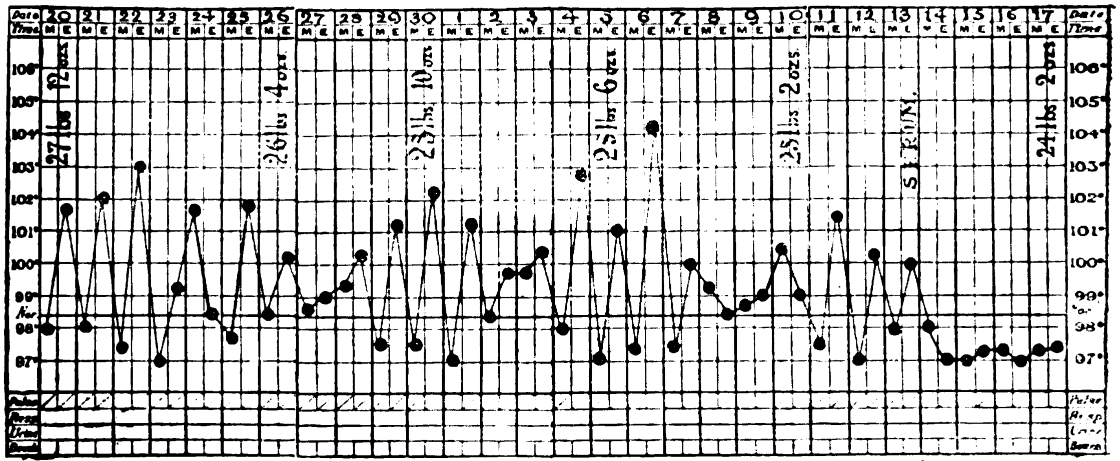
During the first ten days of her stay in hospital she had no attacks of screaming, and no fresh symptoms developed. Her temperature remained up, and she lost weight steadily. Under treatment with alkalis the bacilluria disappeared, and the stiffness in the neck became so slight that it was difficult to be sure of its existence. Mr Carmichael kindly saw the case, and could detect no sign of cervical caries. The tuberculo-ophthalmic test was negative. On October 5 lumbar puncture was performed, and several cubic centimetres of turbid fluid were withdrawn. The fluid contained many lymphocytes and polynuclear cells (23,000 per c.mm.), but no organisms were found in the stained films Dr Alice Taylor, however, cultivated from the serum a gram-negative diplococcus. She reported that the coccus clumped with the patient's serum and with the serum of a London case of post-basic meningitis, and also that the patient's serum clumped a post-basic meningo-coccus from a London case.

During the early part of October the patient was steadily going downhill. She lost weight, and lay in a drowsy, irritable condition, interrupted from time to time by loud fits of screaming. Her headache was undoubtedly very severe, and in its paroxysmal nature recalled what one sees in cases of cerebral tumour. Once or twice she screamed uninterruptedly for three or four hours, and was only relieved by heroin and morphine subcutaneously. Bromide and chloral had no effect whatever. Her temperature remained high, the stiffness of the neck again became worse, and she lay holding her head as if to prevent anyone moving it.

On October 14 1·2 grams of Ruppel's serum dissolved in 10 c.c. water was injected into the spinal canal, 20 c.c. of cerebro-spinal fluid being previously withdrawn. The temperature fell to normal early on the morning of the 15th, and with the exception of a slight rise due to an attack of tonsillitis, remained so during the rest of her stay in hospital.

From the day the serum was injected she never had another symptom. The pain in the head vanished, her irritability quickly disappeared, she put on weight steadily, and when she was discharged on November 26 she was nearly half a stone heavier than when the serum was given. She was perfectly well in every respect, and had no signs whatever of having suffered from meningitis.

One is naturally indisposed to attach too much weight to improvement following the use of a serum, but in this patient the alteration for the better was so very striking, and the recovery so rapid and complete, that it was impossible to escape the conclusion that it was due to the serum. The case was, of course, a chronic one, and although these are the most favourable, this one had already run a course of nearly two months without showing the least signs of abatement. The infection must have been comparatively mild, and it is reasonable to suppose that the bactericidal action of the serum was just enough to turn the scale in the patient's favour. I have used Ruppel's serum in other cases of meningitis with no benefit, but never before in a typical post-basic infection (*i.e.* organism agglutinated by post-basic serum, and patient's serum agglutinating other post-basic cocci). The other cases I have treated were infections with the meningococcus of epidemic meningitis.



Nina K. 6½ yr. Pst Basic Meningitis. Part of temperature chart; the temperature continued normal.

Ruppel's serum is understood to be a polyvalent bactericidal serum, but the strains of organisms used in its production are, I believe, unknown. The interest which is now being taken in the serum treatment of meningo-coccal meningitis, and the inefficacy of all remedies other than sera in the disease, induce me to report this case.[1]

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[1] Since this note was written Poynton and Jeffreys (*Proc. Roy. Soc. Med.*, Nov. 1908) have reported two successful cases. They do not state whether the organism was of the post-basic type in the above sense.

Abstracts

ANATOMY

THE MORPHOLOGY OF THE BRAIN OF THE AUSTRALIAN (1) ABORIGINAL.

J. FROUDE FLASHMAN. Reports from the Pathological Department of the Lunacy Department, New South Wales Government. Vol. I., Part iii., 1908.

FLASHMAN obtained two brains of Australian aborigines who had died in asylums: in both cases the brains were imperfectly hardened and exact measurements were thus not possible. In each he has carefully described the principal fissures and sulci, following the nomenclature instituted by Elliot-Smith for the occipital region; and, in arriving at his conclusions, he has been assisted by other similar brains in his possession, some of which he has described previously.

In the brain of "Mick," who died at the age of 45, the cerebral hemispheres are elongate, covering the cerebellum completely, but though fairly well convoluted they are manifestly less so than in the larger brains of Europeans. In neither hemisphere do the occipital regions bulk largely, a condition resembling that of the simian brain. On the left side the anterior portion of the collateral fissure is separate and distinct from the remainder of that sulcus, and is superficially continuous with the incisura temporalis, thus forming the well-known "Rhinal" fissure of the apes, and presenting a condition similar to that described by Elliot-Smith in the brains of Egyptian fellaheen. On the right side this rhinal fissure is well marked and presents a truly simian appearance. In the occipital region on both sides there is present a marked sulcus lunatus, with its operculum identical to that described by Elliot-Smith for Egyptians. It is best defined on the left side. On the under and mesial surfaces of the occipital lobes on both sides are marked fissures with opercula exhibiting a condition transitional between that of the higher apes and the higher types of man.

In the brain of the other aboriginal, "Billy King," the simian characters of distinct rhinal fissures and of partially developed occipital lobes are also present in both cerebral hemispheres, exhibiting a remarkable correspondence in appearance to the brain of "Mick."

After shortly discussing the position of the Australian aborigine as compared with other races of the Hominidæ, Flashman concludes as follows:—

(1) The brain of the Australian aboriginal shows clearly the

process of philogenetic development which is taking place in the occipital region of the human brain.

(2) If the sulcus lunatus is identical with the Affenspalte, then the Australian aborigine is a primitive member of the human race.

(3) As regards the rhinencephalon, he is undoubtedly primitive, and this is further supported by the condition of the insula, which appeared in some instances to be incompletely covered, but on which Flashman is unable to speak authoritatively until he can obtain better preserved material.

The above points are well brought out in the excellent stereoscopic photographs which accompany the article, and the whole forms a valuable contribution to a subject of great interest. It may be mentioned that in the same number of these reports there is also a long monograph on the skulls of Australian aborigines by Professor Hermann Klatsch of Breslau.

C. J. ROBERTSON MILNE.

COMPLETE SURVEY OF THE CELL LAMINATION OF THE (2) CEREBRAL CORTEX OF THE LEMUR. MOTT and KELLEY, *Proc. Roy. Soc. Lond.*, Ser. B., Vol. lxxx., No. B. 543.

BY an examination of serial sections of the entire cortex of nine different species of lemurs stained by Nissl's or the polychrome blue methods, Mott and Kelley have endeavoured to map out the various areas, motor and sensory, by the different types of cell lamination which they severally present. The demarcation of the motor areas in these species has also been worked out by the stimulation method by Mott in conjunction with Halliburton, and the exact results of this will form the subject of a future communication.

A note on the habitat, mode of life and habits of the lemur, and the correlation of these latter to the cortical development, is followed by a careful description of the morphological appearances of the brains. These are small, weighing on an average only 19 grammes; they present only a few fissures; and the occipital lobes are not developed. But, on the other hand, the olfactory bulbs and tracts are large, indicating that the lemur approximates in its development of these and of its sense of smell to those lower mammals in which this sense is of primal importance. A detailed description of each fissure is given, and the homologous possibilities of some of the rudimentary fissurets, as they are termed, are discussed in conjunction with the results obtained by the investigation of the cell lamination of the various regions in which these fissurets are located.

The greater portion of the paper is taken up by a detailed complete account of the histology of the various regions of the cortex, and this is beautifully illustrated by a number of excellent coloured plates. The authors shortly summarise their findings as follows:—"The cortex of the archipallium (olfactory area), being peculiar both in its lamination and its cell elements, is easily mapped out. The motor area is characterised by the 'Betz' cells, the frontal area by a comparative poverty of cells, both in size and number; and neither frontal nor the upper part of the motor area possesses a definite layer of granules. The sensory areas are distinguished by a rich granular layer; and of these the visual area is marked by the large solitary cells of Meynert and the line of Gennari, the post-central area by a line of large pyramids below the granules; while the temporal area shows a line of peculiar elongated pyramids, which are especially large and conspicuous in the region about the posterior end of the Sylvian fissure." C. J. ROBERTSON MILNE.

PHYSIOLOGY.

AN INQUIRY INTO THE PHYSIOLOGICAL MECHANISM OF (3) RESPIRATION, WITH ESPECIAL REFERENCE TO THE MOVEMENTS OF THE VERTEBRAL COLUMN AND DIAPHRAGM. J. F. HALLS DALLY, *Journ. Anat. and Physiol.*, Oct. 1908, p. 93.

THE paper deals with the physiological mechanism of respiration, as shown by the use of an instrument called the orthodiagraph, and is divided into eight heads.

I. *Results obtained by orthodiagraphic measurement of changes in the trunk which occur during deepest possible respiration.*—Under this head are described the movements or changes of shape of the neck, the shoulders, the presternum, the clavicles, the meso-metasternal joint, the infracostal angle, the umbilicus, and the heart and pericardium.

II. *The movement of the vertebral column in respiration.*—The results of both visual and orthodiagraphic examination are recorded. An explanation of the spinal movement is given, and its importance shown; while the method of calculating the amount of change by means of the orthodiagraph is set forth.

In the next three sections the dissimilarity of the two halves of the diaphragm, the supports of the diaphragm, and the level of the diaphragm after death and at rest and in action during life are described.

Section VI. includes a table of the absolute range of movement of the diaphragm in fifteen healthy males and an equal number of healthy females. Measurements are given for both right and left sides of the diaphragm. A second table shows the absolute descent of the central tendon in ten cases.

In Section VII. the anatomy, the function and the significance of the costo-phrenic pleural reflections are discussed.

The paper, which is illustrated with eleven diagrams, concludes with a brief consideration of the age-changes in the thorax and diaphragm.

E. B. Jamieson.

(4) CONCERNING THE ACTION OF CURARA AND PHYSOSTIGMINE UPON NERVE ENDINGS OR MUSCLES.

Charles W. Edmunds and George B. Roth, *Amer. Journ. Physiol.*, Vol. xxiii., No. 1, Oct. 1, 1908, p. 28.

After an introduction, in which reference is made to the recent work of Langley upon the relation of curara to some effects produced by nicotine on the muscle of the fowl, the results are given of numerous experiments upon the effects of nicotine and curara on normal and degenerated muscle. All the experiments were performed on the gastrocnemius muscles of fowls, the sciatic nerve having been previously cut two to fifty-three days. The relaxation of the nicotine contraction produced by curara, as demonstrated by Langley, was corroborated. Beyond the production of a slight angle on the nicotine curve, curara failed to act about the third day after nerve section. This lack of curara action coincides with the degeneration of the nerve endings, as demonstrated by Huber, and has been explained by Langley as due to increased sensitiveness of the muscle cell to nicotine. The authors find that physostigmine has a much weaker affinity for the muscle cell than nicotine. Physostigmine acts directly upon the muscle cell itself, as it causes contraction seven to eight weeks after the nerve is cut and the nerve ending degenerated. In the paper it is demonstrated that curara directly antagonises physostigmine during all stages of the degeneration, and after discussing the points of action of curara and physostigmine, the authors conclude that curara has a direct action on the muscles of the fowl, but that these special experiments do not preclude the possibility of curara acting upon the nerve ends under more normal conditions. A direct antagonism between physostigmine and curara is shown.

W. Kelman Macdonald.

FATIGUE. WILLIAM M'DOUGALL. **(A Paper read before the Physio-**
(5) **logical Section of the Brit. Assoc. for the Advancement of Science, at Dublin, Sept. 1908.)**

ATTENTION is drawn to facts which indicate that the complex of subjective and objective symptoms to which the name fatigue is commonly given are not the expression of any one kind of change in the organism, but are rather the expression of a change in the ratio of two magnitudes, namely (*a*) the quantity or potential of disposable or free nervous energy operating in the nervous system at any given moment; (*b*) the degree of resistance presented by the nervous paths to the transmission of this free energy in the efferent direction.

It is argued that both magnitudes are subject to large variations from moment to moment owing to local and general causes, and that the symptoms of fatigue are produced by any increase of the ratio $\frac{b}{a}$ (*i.e.* of resistances to the quantity of free energy). Reasons are given for believing that resistances of the nervous paths lie at the synapses.

It is urged that, though every neurone must be regarded as capable of contributing something to the available free energy, we have to recognise as very special springs of energy the innate dispositions that determine affective-conative tendencies, and that the coming into play of any one of these is capable of abolishing the symptoms of fatigue through the liberation of a large quantity of nervous energy (neurokyme), which diminishes the ratio of resistance to energy. A suggestion is made towards the application of this view of the conditions of fatigue to the understanding of neurasthenia and hysteria. AUTHOR'S ABSTRACT.

PATHOLOGY.

THE EARLY CHANGES IN NEUROFIBRILS IN REGENERA-
(6) **TION AND DEGENERATION OF NERVES. (Les métamorphoses précoces des Neurofibrilles dans la Régénération et la Dégénération des Nerfs.)** S. R. CAJAL, *Trav. du Labor. de Recherches Biol.*, April 1907, p. 47.

IN the author's previous researches on the regeneration of the fibres in the peripheral part of a nerve where immediate union of the point of section had been prevented (see abstract in this Review, 1907, p. 842), his observations extended from about the fifth day until complete regeneration had taken place about two or three months after section. At that time he was of opinion that regeneration did not begin before the fifth or sixth day, and that in the case of union by first intention it was complete by the tenth or eleventh day. Perroncito has, however, shown that regeneration may commence even as soon as twenty-four hours after the operation with the development of a collateral or of terminal branches from the axis cylinders, and that by the end of the second day a considerable number of new fibres provided with terminal bulbs have invaded the cicatrix. He has further shown that there may be a peculiar unravelling of the fibrillæ of the axis cylinder of the central end of the nerve, with the formation of minute, tortuous, myelinated collaterals, forming complicated plexuses under the sheath of Schwann, each terminating in either a small sphere or ring containing reticulated neuro-fibrillæ. These processes give origin to a bundle of new fibres which penetrate the cicatrix. This mode of regeneration has been termed by Cajal " Perroncito's phenomenon."

Cajal has now supplemented his previous work by an investigation of the changes on both sides of the division of the nerve immediately and during the first few days after section.

A. *Changes in the Peripheral Segment.*—Early investigation of the cut end of the distal part of the nerve demonstrates hitherto unsuspected changes indicating an unsuccessful attempt at regeneration at the free end. As is well known, by the eighth day all the axis cylinders separated from their trophic centres are broken up and reduced to granular débris, but before the commencement of this process there occurs a very remarkable reaction in the neuro-fibrillæ.

(*a*) Non-myelinated fibres (fibres of Remak) during the first six hours after section become varicose and elongated, with non-reticulated club-shaped projections at their free end. During the second day the club grows towards the cicatrix, hardly ever passing beyond the free end of the nerve. In the cat, the clubs may become reticulated during the second or third day. They vary somewhat in structure and arrangement, and sometimes their fibrillæ become frayed out and terminate in small rings. These changes are inconstant. They are frequently absent in fully-grown rabbits, cats, and dogs. Where they are numerous they appear in a very limited number of nerve fibres.

Cajal differs from Perroncito in regarding these clubs as evidence of a merely temporary power of growth which becomes lost so soon as the nerve fibre begins to degenerate, and all evidence of which disappears with the disappearance of the nerve by the seventh day. Before they are finally lost, the axones become granular, and lose their neuro-fibrillæ, while the neuro-fibrillæ in the clubs become granular and eventually lose all distinct structure.

(*b*) In the myelinated fibres there is generally found a *necrotic portion* next the cut end, characterised by the absence of staining of the fibres and by the filling of the contorted sheath of Schwann by fatty and proteid débris.

Next to this is the *segment of neuro-fibrillary irritation* where the axones maintain a passing vitality and a certain transient irritability. The changes begin in this segment about the tenth or twelfth hour. They become very intense about the second or third day, diminish during the fourth day, and disappear completely after the fifth day. These changes consist in various forms of growth of neuro-fibrillæ, which are described with great fulness of detail. As in the non-myelinated fibres, these changes are merely of a temporary nature, and not truly regenerative.

Next to this segment Cajal describes a *zone of passage to the indifferent segment*, in which there are changes which may be regarded as attempts at formative reaction. Here the fibrillæ may become frayed out like a sword-handle or like a mop, or they may form at the site of the node of Ranvier a superficial loop or reticulum, or give off short branches which make spiral turns up and down along the side of the axone.

Beyond this, in the *indifferent segment* there is a complete absence of attempt at regeneration. The nerve may become varicose, then granular, and about the end of the third or the beginning of the fourth day may be fragmented. In the sciatic nerve of the cat, about 20 per cent. of the fibres degenerate so rapidly that at the end of the second day their axis-cylinder is not recognisable.

B. *Changes in the neuro-fibrillæ of the central end of the nerve.*—These commence from the first day after operation, and are of two kinds—(*a*) The normal or direct mode, in which there is no preparatory change in the axone, and which occurs in young animals and in all the small or medium-sized fibres of adult animals. (*b*) The indirect mode of Perroncito, in which the new formation of fibres is preceded by a curious intra-tubular change.

1. *The direct mode.*—(*a*) The fibres of Remak by the end of the first day have their ends pale and swollen. After thirty-six hours many show a bud of growth; others have extended a considerable way towards the exudation. This becomes penetrated irregularly from the second to the fourth day. (*b*) In the medullated nerves the first to the third day is occupied by the breaking up and removal of the necrosed myeline. From the twenty-fourth to the fortieth hour the bud which has formed on the end of the axone becomes reticulated, and grows past the necrosed segment towards the cicatrix. From the second to the third day new fibres perforate the exudate and ramify in its substance, some of them even passing through the exudate, and by the sixth or eighth day penetrating into the sheaths of Schwann of the peri-

pheral segment of the nerve. Many processes lose their way in the cicatrix, and either wander irregularly or even turn backwards.

2. *Indirect mode.*—This is constant in larger medullated fibres of adult animals, if they have been contused or crushed. It consists in a fraying-out of the neuro-fibrillæ, which are displaced towards the periphery, so as to come in contact with the sheath of Schwann, against which they form plexuses, while the disintegrating myeline is directed inwards. It is usual for a part of the axis-cylinder to escape this process. The unravelled fibres may give off small collaterals, or they may reunite and grow to the distal segment of the nerve, as already described.

Further fine changes in the nerves, as described in the original paper, need not be noted here. This, as well as other recent articles by Cajal, are in French, so that they are now more accessible to those who have no acquaintance with Spanish.

ALEXANDER BRUCE.

ON THE RESISTANCE OF THE RETICULUM OF THE NERVE (?) CELL TO DECOMPOSITION. (Sulle resistenza del reticolo interno delle cellule nervose alla putrefazione.) LIVIO PRATO, *Ann. di Freniatria*, f. 1, 1908, p. 33.

THE author refers to the previous literature on the decomposition of the nervous system, and states the results of his own investigations. In the cortex of a rabbit killed by bleeding, and maintained at 15° C., no change was evident in the reticulum of the nerve cell during the first forty-eight hours. The nuclei and nucleoli were intact. The first change in the reticulum appeared after seventy-two hours, and developed especially in the fine perinuclear reticulum, which broke up. This change gradually increased for five to six days; the nucleus became pale and its membrane difficult to differentiate. Seven or eight days after death the perinuclear zone looked as if made up of a quantity of small round black granules after impregnation with silver. This granular disintegration was complete throughout the cell by the tenth day.

At a temperature of 20° C. the resistance was less, the granular degeneration being complete in about six days.

The human brain showed more resistance, the process commencing later and lasting longer than in rabbits. At 15° C. the granular degeneration was not complete in the cell till fifteen days after death. In the dendrites it was delayed until the eighteenth or nineteenth day. Thus it is clear that neurofibrillæ present marked resistance to cadaveric decomposition. The first change is produced in the perinuclear network, gradually extends to the more superficial fibrils, and is slowly propagated to the dendrites. The greatest resistance is offered by the cone from which the axis cylinders arise. On the other hand the nucleus itself is apparently the first to degenerate.

ALEXANDER BRUCE.

ON THE ACTION OF COLD AND OF ELECTRICITY ON THE (8) NEUROFIBRILLARY RETICULUM. (L'azione del freddo e dell' elettricité sul reticolo neurofibrillare.) NINO DE PAOLI, *Riv. Speriment. di Freniatria*, Vol. xxxiv., f.1-2, 1908, p. 217.

THIS paper gives an account of an investigation, carried out by means of Donaggio's staining method, to determine whether electricity associated with cold would produce more marked changes in the reticulum than those produced by cold alone. The writer arrives at the conclusion that electricity does not affect the lesions in the neurofibrillary reticulum which appear under the influence of cold.

ALEXANDER BRUCE.

SECONDARY DESCENDING DEGENERATIONS OF THE (9) FORMATIO RETICULARIS IN MAN, FOLLOWING ON FOCAL LESIONS OF THE TEGMENTUM. (Étude des dégénérescences secondaires descendante de la formation réticulée, chez l'homme, consécutives aux lesions en foyer de la calotte pédonculaire.) LONG and ROUSSY, *Rev. Neur.*, Aug. 15, 1908, p. 757.

THE case here studied has been already reported, but the present communication is a purely anatomical one. The original lesion was one of softening in the optic thalamus, involving chiefly the external nucleus, but also the middle and internal nuclei, with several prolongations into the sub-thalamic region of the tegmentum. Thus the red nucleus and the fibres of the oculo-motor nerve were involved; also a considerable part of the reticular formation of the tegmentum, the posterior commissure, the nucleus of Darkschewitsch, and the fibres of the posterior longitudinal fasciculus; the mesial fillet; part of the internal and external geniculate bodies and of the anterior corpus quadrigeminum.

Of direct degenerations there are:—

1. *Brachia of anterior and posterior corpora quadrigemina and fibres of the central auditory bundle in connection with the superior nucleus of the lateral fillet.*—A long discussion is concluded by an expression of the opinion that in addition to fibres joining the

posterior corpus quadrigeminum with the internal geniculate body, there is another tract of fibres belonging to the central auditory paths, which terminates inferiorly in the nucleus superior of the lateral fillet, and loses itself in an upward direction in the region of the mesial fillet.

2. *Posterior longitudinal bundle.*—Direct descending degeneration of fibres coming from the nucleus of Darkschewitsch is clearly established. An inner and an outer group of fibres seems to exist; the former come from Darkschewitsch's nucleus, the latter may come from the reticular formation of the tegmentum itself. As the degenerated fibres cannot be traced further than the third cervical segment, it may be assumed that the fibres from Darkschewitsch's nucleus are not those which reach the cervical enlargement; these come from the region of Deiter's nucleus.

3. *Central tegmental tract.*—Of the inferior connections of this tract, the case suggests that, apart from its relation to the grey matter of the inferior olive, some of the fibres end in the accessory olivary bodies (specially the external). There is no sign of any fibres going beyond the inferior olive.

4. *Crossed fibres of the inner portion of the formatio reticularis.*—The lesion in the right tegmentum has produced degeneration of a small bundle of fibres in the inner part of the reticular substance on the left side. They are perhaps descending fibres from the superior cerebellar peduncle, or else they belong to the fibres that form the crossing of Meynert.

5. *Central path of the fifth nerve.*—The authors describe a very definite tract of degenerated fibres, crossing in the middle line in the upper part of the tegmentum, passing horizontally across the raphé, and then vertically, to end in the sensory nuclei of the fifth. They unite the mesial fillet and the neighbouring reticular formation with the contralateral sensory nucleus of the fifth.

6. *Sensory decussation in the medulla.*—In this decussation, apart from fibres from the nuclei of the posterior columns, there are fibres representing the central paths of the nuclei of the sensory cranial nerves.

S. A. K. WILSON.

CONDITION OF THE CEREBRUM IN INFANTS SUFFERING (10) FROM INHERITED SYPHILIS. (Grosshirnbefunde bei hereditär-syphilitischen Säuglingen.) B. WEYL, *Jahrb. f. Kinderheilk. u. physische Erziehung*, Oct. 1908.

THE presence of lymphocytosis in the cerebro-spinal fluid of children suffering from inherited syphilis suggested to Weyl the probability of an inflammatory condition of the meninges. He confines his attention to the pia mater and the grey and white matter of the cerebrum. He limits his researches to six cases, ranging in age from 13 days to 4½ months, and he appends their histories with the results of the post-mortem examinations. In one case only were there any cerebral symptoms during life, and in that case the fluid obtained by lumbar puncture was found to contain a large excess of cells.

There were no marked naked-eye changes in the brain in any of the cases. In one case the pia mater was slightly injected, but in none were there any large hæmorrhages. In one there was a slight excess of cerebro-spinal fluid. For microscopic purposes he removed pieces of tissue from the anterior and posterior aspects of the cerebrum and from the neighbourhood of the ventricle. His preparations were stained with saturated aqueous solutions of thionin and toluidin blue.

The pia mater was found to be thickened throughout, showing an increase of connective tissue fibrils, also numerous fibroblast-cells, with large pale nuclei and darkly-stained chromatin granules. The tissue was infiltrated with numerous cells of different kinds—plasma cells present in five cases, large round cells in all cases, lymphocytes in all cases, leucocytes very few or absent, red blood corpuscles seldom present, a few mast cells. He describes minutely the microscopical character of the plasma cells and the large round cells, and discusses fully the significance of the lymphocytes and the large round cells which he found in all his cases.

The large round cells are normally present in the embryonic pia, but are absent in healthy full-time children, and he regards their presence in his cases as probably due to a disturbance in development caused by the syphilitic virus. As regards the origin of the lymphocytes, he considers it possible that they arise from the pia mater, but it is not yet definitely proved.

The vessel walls appeared in places thickened with cell infiltration, with a few plasma cells and lymphocytes. Inside the vessels of the pia, in addition to lymphocytes and a very few polynuclear leucocytes, were numerous large white cells which he divides into embryonic forms of cells, cells of endothelial origin, plasma cells. The embryonic forms of cells he divides into those resembling the large round cells and those resembling plasma cells.

With regard to the cortex, in only one case had the inflammatory condition of the pia extended so as to affect the grey matter. In another case there were three small foci of cells grouped around the vessels of the cortex. The wall of the vessel was thickened, there were rod cells external to it and attached to it by slender processes. There were also numerous plasma cells and degenerated and broken-up cells. These foci were not circumscribed, but merged gradually into the brain tissue. There was no increase of neuroglia cells.

In another case in the white matter in the proximity of the ventricle were found bundles of cells, which he calls spongioblasts, surrounding the vessels. These cells have been found regularly in the fœtus, and their presence in this case is probably due to a disturbance of development set up by the syphilitic virus.

He sums up by remarking that the most noteworthy fact elicited by his investigations is, that of six infants affected with inherited syphilis the pia mater was diseased in all cases and in three the substance of the brain itself showed changes. And he puts the question: "Do these changes disappear in course of time, or do they remain permanently? Is it possible that they may have some share in causing mental disturbance subsequently?"

R. J. MACKESSACK.

CHANGES IN THE POSTERIOR COLUMNS OF THE SPINAL (11) CORD IN DIABETES MELLITUS.

(Ueber die tabiformen Veränderungen der Hinterstränge beim Diabetes.) L. SCHWEIGER, *Arb. a. d. Neurol. Instit. a. der Wien. Universität*, Bd. xiv., 1908.

THE author gives a summary of the cases previously recorded in medical literature, and adds the reports of four cases of diabetes in which he has examined the spinal cord microscopically.

In the first case changes were found in the posterior columns of the cord in all regions, but the exact localisation varied at different levels. In the lower and upper sacral regions, the dorsomedial sacral bundle of Obersteiner was normal, or only very slightly affected. The ventral posterior fields showed no definite degeneration. But the other regions of the posterior columns were pale and degenerated in the sections stained according to Weigert's method. In several segments, especially in the upper lumbar and lower dorsal regions, there was a distinct pallor of the root entrance zone. In Goll's column there was well-marked degeneration (except in the dorsal region).

In the lower dorsal region a double degeneration area could be recognised; a median area close to the median septum, and a lateral area, corresponding to the "bandelette" external. But in both areas, especially in the lateral, very many normal nerve fibres could be recognised.

In the upper dorsal region, new degenerated fibres entered these external bandelettes, and thus the area of degeneration was increased. Also the degeneration in Goll's columns was increased.

A similar distribution of the changes was seen in the lower cervical region; finally in the upper cervical region the degeneration in the root area ceased. The whole of Goll's column was pale. External to it was a streak of normal white matter, *i.e.* on the median side of Burdach's column; then followed a broad zone of degeneration in Burdach's column, on the outer side of which there was again normal white matter. From the distribution of degeneration it may be concluded that the changes were of root origin: the lumbo-sacral and lower dorsal roots had been chiefly affected, whilst the upper dorsal and upper cervical roots were unaffected, and only the cervical enlargement was affected in the same manner as the lumbar. The normal condition of the dorso-medial sacral bundle, and of the ventral posterior fields, favour our view that the changes were of root origin.

In the degenerated areas there was a slight proliferation of the neuroglia, as in secondary sclerosis. In sections stained according to Marchi's method there was slight degeneration (fine granulation) of the intraspinal fibres of the posterior nerve roots.

In a second case of diabetes similar changes were found in the spinal cord. (These are not described in the original article.) In a third case there were marked changes in the posterior column of root origin (not described in detail). In a fourth case the spinal cord was normal. The changes are discussed carefully, and are regarded by the author as the result of a ferment intoxication.

R. T. WILLIAMSON.

CONTRIBUTION À L'ANATOMIE PATHOLOGIQUE ET À LA (12) PATHOGÉNIE DU TABES.

MARINESCO and MINEA, *Journ. f. Psych. u. Neurol.*, Bd. x., Heft. 4-5, 1907, p. 182.

As a result of the examination of six cases by Cajal's methods, the authors state that two processes are at work in tabes, degenerative and regenerative. Both are seen more particularly in the central branch coming from the spinal ganglion cells.

The former is revealed by the accumulation of inter-fibrillar substances at certain points of the axis cylinder; moniliform fibres with fusiform swellings are found in the interior of the ganglia, in the posterior roots, and in the posterior columns. The occurrence of this lesion at the very outset of the disease is significant, for it means that the initial lesion of tabes is parenchymatous, a simple atrophy of the central branch of the posterior root ganglion cells. A second degenerative lesion is axolysis with vacuolation and resorption of the axis cylinder.

There occurs consecutively a regenerative change, beginning at the intact end of the ganglionic fibre. Where this is is often difficult to establish with certainty; the fact that the peripheral branch of the ganglion cells is not involved suggests that the area of degeneration does not spread to the point where the axon divides into central and peripheral branches. Regeneration takes place by the formation either of fine collateral fibres or of fine terminal fibres, and these newly-formed fibres frequently subdivide by bifurcation or by Y-division. These regeneration-fibres often form masses round the ganglion cells, but eventually make their way towards the posterior roots and the cord.

The authors discuss the bearing of this regeneration on the improvement in tabetic cases which is not infrequently seen clinically. They dispute the views of Nageotte which assign the disease to a transverse radicular neuritis, maintaining, as above, that the primary lesion is parenchymatous.

S. A. K. WILSON.

PATHOLOGIC REPORT OF THE NERVOUS SYSTEM IN A CASE (13) OF SPONDYLOSE RHIZOMELIQUE.

JOHN H. W. RHEIN, *Journ. Am. Med. Ass.*, Vol. li., No. 6, 1908.

THE patient presented the characteristic clinical features, and pathologically there was found slight degeneration of some of the arterior and posterior spinal roots; slight peripheral neuritis; and muscle taken from the plantar portion of the foot was degenerated. The writer holds that the relationship of arthritis deformans to these cases is very remote, and numerous writers on the subject are quoted.

D. K. HENDERSON.

CLINICAL NEUROLOGY.

HYDROCEPHALUS OF MENINGOCOCCUS ORIGIN, WITH A (14) SUMMARY OF RECENT CASES OF MENINGITIS TREATED BY ANTI-MENINGOCOCCUS SERUM.

KNOX and SLADEN, *Arch. of Pediat.*, Oct. 1908, p. 761.

AFTER an historical introduction of the literature on the subject, the authors describe two cases.

Both cases were of the type commonly known as post-basic meningitis in this country, and as the present writer had, owing to the kindness of Dr Knox, the privilege of seeing the second case while in the Johns Hopkins Hospital, he is aware that the clinical appearances in this case at least also agreed with this diagnosis.

In this case communication between the ventricular sinuses and the spinal canal having become closed, the ventricles were tapped on five occasions, and Flexner's anti-meningitis serum (15 c.c.) injected into them. On all occasions meningococci were found in the cerebral fluid. Both cases ran a lengthy course, and both cases died.

The authors state that "these cases are reported because the number of similar instances in which the causal organisms have been found in the hydrocephalic fluid are certainly few."

The authors then proceed to give a summary of the cases of meningococcus cerebro-spinal meningitis treated by an anti-meningitis serum (Flexner) in the wards of the Johns Hopkins Hospital during the past year. A. DINGWALL-FORDYCE.

ANALYSIS OF 400 CASES OF EPIDEMIC MENINGITIS (15) TREATED WITH ANTI-MENINGITIS SERUM.

FLEXNER and JOBLING, *Arch. of Pediat.*, Oct. 1908, p. 747.

THE authors state that "the cases of meningitis upon which this analysis rests have arisen in different and widely-separated parts of the United States and Canada, and in Great Britain"; and further, "in view of the fact that we have demanded that the bacteriological diagnosis be made in every case of meningitis for which we have supplied the serum, and which we have accepted for our analysis, and that in doubtful instances we have ourselves examined slides and sometimes cultures prepared from the spinal exudates, we can speak with positiveness upon this important subject."

Their communication is consequently one of great value.

The analysis is based upon histories of cases of epidemic meningitis in which the diagnosis was established by bacteriological examinations as well as by the usual clinical tests, and the histories have been supplied by physicians in hospitals and in private practice who have employed the serum.

In one way only was any selection of cases made, namely, that all cases which survived the first dose of serum less than twenty-four hours were excluded from the tabulations.

Results according to the Ages of the Patients.—The total number of cases subjected to tabulation is 393. The total number of recoveries among these cases was 295, and the total number of deaths 98. Hence there was 75 per cent. of recoveries and 25 per cent. of deaths. Tabulated according to the ages of the patients, the following is the result obtained:—

	No. of Cases.	Recovered.	Died.	Died.
Under 1 year . .	22	11	11	50 per cent.
Between 1 and 2 years.	19	11	8	42·1 „
„ 2 „ 5 „	68	52	16	23·5 „
„ 5 „ 10 „	79	70	9	11·4 „
„ 10 „ 20 „	105	80	25	23·8 „
Over 20 years . .	87	64	23	26·4 „
Age not given . .	13	7	6	46·1 „

Results according to the Period of Infection.—Only those histories are used which are definite as to the period of the disease at which the injection of the serum was begun. Such histories numbered 361.

Period of Injection of Serum.	No. of Cases.	Recovered.	Died.	Died.
First to third day .	123	107	16	16·5 per cent.
Fourth to seventh day	126	96	30	23·8 „
Later than seventh day	112	73	39	35 „

Regarding late injection, the authors state, "On the whole, therefore, the outlook even for the latter class of cases is not wholly discouraging; and, indeed, we are of the opinion that as long as the diplococcus is still present in the meningeal exudate, and the mechanical damage to the anatomical structure is not irreparable, the employment of the serum holds out hope of considerable benefit."

Manner of Termination of the Symptoms.—Owing to difficulty in obtaining reliable information in many instances concerning this point, the authors merely give an approximate decision. Of 273 cases in which the history was sufficiently explicit, 200 terminated by lysis and 73 by crisis.

Influence on Diplococci, Spinal Exudate and Leukocytosis.—The later and far wider experience which the authors have had confirms the views which they previously expressed, namely, "that very soon after the serum injections were begun the diplococci tended to be greatly reduced in numbers, to disappear from the fluid part of the exudate, to become wholly intracellular (unless they were now entirely absent), to present certain changes in appearance, as swelling and fragmentation, and to stain diffusely and indistinctly, and co-incidentally to lose viability in cultures." "There seems little doubt that part of the beneficial effect of the serum injections must arise from the restriction of multiplication, and from the greater phagocytosis of the diplococci."

The exudate in the meninges very quickly loses turbidity under the influence of the serum injections, and "a fair number of cases in which the notes state the spinal exudate to have been purulent have recovered, and the rapid clearing of the exudate was observed even in them."

As regards the leukocyte count, "the facts at hand, based upon many counts of the circulating leukocytes before the injections of serum were begun and afterward at regular intervals, show, as was to be expected, a fall, often very rapid and even critical, in the number of leukocytes in the general blood stream with which the disappearance of the diplococci and the clearing of the spinal exudate are correlated. The reverse of the phenomena here mentioned is encountered in those cases not responding to the serum, or responding imperfectly, in which death is the result."

A. DINGWALL-FORDYCE.

THE SERUM TREATMENT OF EPIDEMIC CEREBRO-SPINAL (16) MENINGITIS BASED ON A SERIES OF FORTY CONSECUTIVE CASES. C. H. DUNN, *Arch. of Pediat.*, Oct. 1908, p. 756.

As these cases are doubtless included in those reported upon by Flexner and Jobling (vide *supra*), it is sufficient to give the author's conclusions:—

"1. The use of the Flexner anti-serum is of great value in epidemic cerebro-spinal meningitis. I believe its value to be comparable to that of diphtheria anti-toxin in diphtheria.

"2. The use of the serum at times aborts the disease, frequently rapidly relieves its symptoms, shortens its course, lessens the liability to sequelæ, and greatly reduces its mortality.

"3. The serum should be used as early as possible in all cases, even of suspected epidemic meningitis.

"4. It should be frequently repeated as long as there are symptoms or any tendency to relapse.

"5. Late chronic cases are unfavourable for the use of the serum, but any case in which the diplococci are present has some hope of relief by its use.

"6. Some cases are resistant." A. DINGWALL-FORDYCE.

ABNORMAL REACTIONS TO HORSE SERUM IN THE SERUM (17) TREATMENT OF CEREBRO-SPINAL FEVER. J. R. CURRIE, *Journ. of Hygiene*, Vol. viii., No. 4, Sept. 1908, p. 457.

IN the *Journal of Hygiene* for January 1907 the author had noted the effect of repeated injections of horse serum in a number of persons who were for the most part diphtheria patients. Certain of these persons developed abnormal serum reactions, and the view was expressed that the interval of time between the injections of serum was a primary factor in determining these abnormal reactions.

In this paper reference is made to the corresponding serum phenomena which emerged during the treatment of fifty cases of cerebro-spinal fever.

The fifty cases had 270 injections in all, an average of 5·4 per head. Twenty-eight of the fifty had more than three injections, seventeen had more than five, and six had more than ten. The largest number of injections in a single case was twenty-one.

The fifty cases received 7958 c.c. of serum in all, an average of 159 c.c. per head. Twenty-three of the fifty had more than 90 c.c: and twelve had more than 200. Six of the cases had each more than half a litre in all, the largest total for a single person being 725 c.c.

Of the fifty cases thirty-six had subcutaneous injection only; in thirteen cases one injection was into the spinal theca, and the remaining injections were subcutaneous; and in one case one injection was thecal, one intravenous, and the remainder subcutaneous. None of the cases furnished a record of previous serum treatment at any time. Twenty-six recovered from the disease.

Of the fifty cases twenty-nine had serum rashes. In fifteen of these the normal rash alone appeared. Seven of the patients showed both a normal and an abnormal reaction, and seven had an abnormal reaction only. A normal reaction with or without a following abnormal reaction was thus observed in twenty-two cases, and an abnormal reaction, with or without a preceding normal reaction, in fourteen cases.

In dealing with the influences at work on these cases in producing abnormal reactions, five points are considered—The total quantity of serum injected; the total number of injections given; the interval between the first injection and the final injection; the presence or absence of an earlier normal reaction; and the quantity of serum administered within the latent period of the normal reaction.

The phenomena are discussed in detail, and the following conclusions are drawn:—

The total volume of serum given did not affect the frequency of abnormal reactions.

The total number of injections of serum, in certain cases, may have been a factor in inducing abnormal reactions.

The interval of time between the injections concerned was the primary influence in determining abnormal reactions.

It was not apparent that a preceding normal reaction predisposed to a subsequent abnormal reaction.

It was not apparent that a large administration of serum within the latent period predisposed to a subsequent abnormal reaction.

In a theoretical note the author sustains a suggestion already advanced by him, that a secondary antibody might play a part in the reactions which follow the injection of extraneous sera, inasmuch as the toxic product, which resulted from the interaction of a substance contained in the serum injected and of an antibody which it originated, might evoke a secondary antibody which combined with the toxic product, controlled its effects and ultimately brought the reaction to a close. The latent period of the secondary antibody was to be regarded as shorter than that of the primary antibody. In the normal reaction the various processes were gradual. In one of the forms of the abnormal reaction the case was otherwise; in the immediate abnormal reaction the primary antibody produced by the first injection of serum persisted at the time of the second injection, but the secondary antibody, evoked by the toxic product of the first injection of serum with the primary antibody, had already vanished from the system. When, therefore, the antibody-producing substance of the second injection of serum reacted with the primary antibody produced in the organism by the first injection of serum, the abruptly liberated toxic material exerted its hurtful influence unchecked until sufficient time had elapsed to admit of the preparation anew of a secondary antibody to control its effects.

Goodman, in America, had in some measure traversed this view on the ground that although it might account for the phenomena occasioned by repeated injections of serum, it could not hold for the corresponding phenomena elicited by diphtheria toxin. In terms of the side-chain hypothesis Goodman had advanced an alternative theory to the effect that the injection of small doses of toxin leads to the destruction of certain sessile receptors and the sympathetic degeneration of others, so that vital cells are left more open to attack. The author brings evidence to show that reactions of supersensitation to extraneous sera have no special relation to sessile receptors of the cells of vital organs.

The theories of Nicolle and Pozerski, and of Nicolle and Abt, are also discussed, and the author finds support for his view in the work of Vaughan and Wheeler on the split products of egg albumen. AUTHOR'S ABSTRACT.

CLINICAL STUDIES OF LABYRINTHINE MENINGITIS AND (18) THE TREATMENT THEREOF. (Zur Klinik und Behandlung der labyrinthogenen Meningitis.) G. ALEXANDER, *Ztschr. f. Ohrenheilkde.*, 1908, lvi. 249.

THREE cases are described of meningitis occurring in the course of a chronic suppuration of the labyrinth.

CASE I.—W. G., æt. 13. Chronic suppurative middle-ear disease of many years' standing. Meningitic symptoms for two days; spontaneous nystagmus observed on lateral deviation to the left; caloric nystagmus not present.

Operation.—Cholesteatoma found penetrating a fistula in the horizontal semi-circular canal. Dura of middle fossa thickened and covered with granulations. Vestibule opened contained cholesteatoma, also cochlea.

The dura of the posterior fossa was incised. The brain was œdematous. On lumbar puncture turbid fluid obtained, which contained numerous leucocytes and cocci. The patient recovered.

CASE II.—F. G., aged 24. Left-sided otorrhœa since earliest childhood. Headache and giddiness of seven weeks' standing. Spontaneous nystagmus to the right.

Operation.—Complete mastoid operation. The sinus and dura of middle and posterior fossæ exposed and incised; turbid cerebro-spinal fluid escaped. Vestibule and cochlea opened, contained cholesteatoma. Lumbar puncture; fluid contained numerous leucocytes and gram positive cocci. The patient recovered.

CASE III.—A. K., aged 40. Left-sided otorrhœa since childhood. For six weeks marked giddiness, vomiting, and headaches. There is spontaneous nystagmus on looking to the right, disturbance of equilibrium.

Operation.—Complete mastoid operation. Semi-circular canals and cochlea opened; turbid fluid escaped. Dura of posterior and middle fossæ exposed and incised; cerebro-spinal fluid markedly turbid. The patient recovered. W. G. PORTER.

TWO CASES OF CHRONIC SYPHILITIC MENINGITIS. (Deux (19) cas de méningite chronique syphilitique.) VINCENT, *Rev. Neurol.*, 1908, p. 1049.

CHRONIC meningitis, as shown by examination of the cerebro-spinal fluid, may exist for a long time as an isolated phenomenon without any other symptoms, and then be followed by definite nervous manifestations. In the first case spinal lymphocytosis persisted long after the disappearance of headache, thus indicating the necessity for further treatment (v. *Rev. of Neurol. and Psychiat.*, 1907, p. 718). In the second case, in which the meningitis had been present for nearly a year without other symptoms, auditory neuritis suddenly developed.

J. D. ROLLESTON.

SYPHILITIC POLIO-ENCEPHALITIS. TOTAL AND BILATERAL (20) OPHTHALMOPLEGIA, ACCOMPANIED BY BULBAR SYMPTOMS. SUCCESS OF SPECIFIC TREATMENT. (Polioencéphalite syphilitique Ophtalmoplégie totale et bilatérale, accompagnée de symptomes bulbaires. Efficacité du traitment spécifique.) DIEULAFOY, *Presse Médicale*, Nov. 11, 1908, p. 721, and *Bull. de l'Acad. de Méd.*, 1908, p. 353.

A MAN, aged 29, who had had a chancre six years previously, followed by secondary symptoms and a gumma of the palate, was admitted to Dieulafoy's service in November 1907 with complete paralysis of all the intrinsic and extrinsic ocular muscles, with the exception of the external rectus. The ophthalmoplegia had started gradually eight months previously, having been preceded by signs of involvement of the bulbar nuclei, which had persisted in spite of treatment. The bulbar symptoms were polydipsia and polyuria without glycosuria, nasal voice, dysphagia, atrophy of part of the right sterno-mastoid and upper part of the right trapezius, with right hemiatrophy of the tongue and deviation of it to the right. Syncopal attacks, vertigo, and vomiting indicated affection of Deiter's nucleus. Electrical treatment was not employed. Rapid improvement followed injection of biniodide of mercury. By January 1908 the palatal and pharyngeal palsies had gone, and the ophthalmoplegia had diminished. In the following November there was no longer any muscular atrophy, the polyuria and polydipsia were much less, and all that remained of the ophthalmoplegia was a slight left external strabismus. Two striking photographs illustrate the condition of the patient before and after treatment. J. D. ROLLESTON.

TERTIARY SYPHILITIC LESIONS IN TABES, WITHOUT A (21) PREVIOUS HISTORY OF SYPHILIS. (Sur les lésions syphilitiques tertiaires apparaissant au cours du tabes à antécédents spécifiques ignorés.) A. MASSARDIER, *Thèses de Lyon*, 1907-1908, No. 98.

THERE are only fourteen cases in literature of the association of tabes with tertiary syphilitic lesions in which the primary and secondary phenomena had passed unnoticed.

In nine of these tabes had preceded the syphilitic lesions by periods varying from one month to twelve years. In five no date was given. In Massardier's case multiple gummata were associated with tabes in a woman, aged 55, who showed no trace of a chancre or of any secondary lesions.

Mercury produced cicatrisation of the gummata, but did not influence the lightning pains, which were subsequently alleviated by pyramidon (v. *Rev. Neurol. and Psychiat.*, 1906, p. 748, and 1907, p. 633). J. D. ROLLESTON.

SERUM DIAGNOSIS OF SYPHILIS. W. J. BUTLER, *Journ. Am.* (22) *Med. Ass.*, Vol. li., No. 10, 1908.

THE writer gives an account of the history and literature on the subject, points out the difficulties of obtaining the reaction, and describes methods. His conclusions are as follows:—

The serum reaction for syphilis is specific. It is found positive in from 90 to 95 per cent. of all cases with syphilitic manifestations. It is found positive in 70 to 80 per cent. of parasyphilitic diseases. It is found positive in 50 to 60 per cent. of latent cases.

The reaction in many cases is influenced by treatment of the patient, and it is not improbable that this number would be greatly increased if the reaction were pursued throughout prolonged treatment. A positive reaction indicates activity of the specific virus, and is an indication for anti-syphilitic treatment.

While a positive reaction indicates syphilis, a negative reaction does not have an equal negative value. It is diagnostic of a systemic infection, whether acquired or inherited, and not an organ diagnostic measure. The reaction will be found of enormous value in differential diagnosis in every department of medicine.

D. K. HENDERSON.

TABES AND GENERAL PARALYSIS IN THE LIGHT OF RECENT (23) RESEARCH ON SYPHILIS. (Tabes und Paralyse im Lichte den neueren Syphilisforschung.)

FRITZ LESSEN, *Berl. klin. Woch.*, Sept. 28, 1908, S. 1762.

THE author finds that every case of general paralysis he has examined gives a positive Wassermann's reaction, whereas in tabes exactly 50 per cent. of his cases only gave a positive result. He considers that a negative reaction in a suspected case of general paralysis may be taken as almost certainly excluding that disease. In cases of undoubted tabes with a negative reaction, the process may be looked upon as no longer active. A positive reaction, on the other hand, indicates a necessity for antisyphilitic remedies, the use of which may convert a positive into a negative reaction. The duration of the cure and the necessity for repetition may be controlled by the serum reaction. J. H. HARVEY PIRIE.

PEL'S EYE CRISES AND CERTAIN RARE FORMS OF DIS- (24) TURBANCE OF SENSATION IN TABES DORSALIS. (Ueber Pel'sche Augenkrisen und einige seltenere Sensibilitätsstörungen bei Tabes Dorsalis.)

A. KNAUER (Greifswald), *Muench. Med. Wochenschr.*, No. 37, Sept. 1908.

IN 1898 Pel described a case of tabes with what he called eye crises, fits of severe stabbing pain in the eye, with redness and swelling of the conjunctiva, increased lacrymation, and photophobia. The crises lasted two or three hours, and appear to have been very frequently repeated. Only a very few cases of this form of eye trouble associated with tabes have been described.

The case described by Dr Knauer is that of a woman aged 36, suffering from tabes in an advanced stage. She developed a sudden attack of severe burning pain in the right eye, accompanied by great conjunctival swelling and redness. The tissues round the eye were also swollen and tender. The sight appeared unaffected, but, owing to the photophobia, the eye could not be opened in daylight. At intervals of about fifteen minutes there was severe boring pain in the right eye, and over an area of skin adjoining the right eye to the outer side. These fits of pain lasted about five minutes. In the intervals when pain was absent examination showed great hyperæsthesia in both upper branches of the right fifth nerve and in the right lingual nerve. Cold applications appeared specially painful. The attack lasted about two days. A careful examination by an ophthalmic surgeon revealed no sign of any disease of the eye. Cultures from the conjunctiva gave negative results. Ten days from the beginning of the attack in the right eye an exactly similar condition showed itself in the left. On this occasion it was found that the hyperæsthesia began in the cornea, and spread from that centre to the conjunctiva and skin in the neighbourhood. (The latter part of the paper, devoted to a discussion of various disturbances of sensation in the same patient, is not noticed in this abstract.)

J. V. PATERSON.

THE OPTIC NERVE CHANGES IN MULTIPLE SCLEROSIS.

(25) WARD A. HOLDEN, *Journ. Amer. Med. Assoc.*, July 11, 1908.

IN this paper cases are given illustrating the pathological changes in the optic nerves in multiple sclerosis, the types of fields of vision, and the corresponding ophthalmoscopic changes in the optic discs. The visual disturbances consist of: (1) concentric contraction of the field of vision; (2) central scotoma; (3) a combination of these two. With certain discrepancies, these types of fields are associated with characteristic opthalmoscopic appearances of degeneration in the optic discs. When the papillo-macular bundle of the optic nerve, which is distributed to the region of the macula lutea, the centre of distinct vision, is alone involved, a sclerotic plaque is seen in the centre of the optic nerve as it emerges from the chiasma; but when it has descended to the optic disc, it occupies the inferior temporal quadrant of the disc. Illustrations are given to demonstrate these points.

In considering the causation of non-toxic retro-bulbar neuritis, the author shows that many of these non-toxic cases are due to sphenoidal and ethmoidal disease; and he concludes that a non-toxic retro-bulbar neuritis, if not due to a sinusitis or directly to syphilis, diabetes, a neoplasm or trauma is, as a rule, a manifestation of multiple sclerosis, although no other symptoms of the disease may be present. W. KELMAN MACDONALD.

OPTIC NEURITIS IN MULTIPLE SCLEROSIS. (Ueber Neuritis (26) optica bei multipler Sklerose.) KURT BAGH, *Klin. Monatsbl. f. Augenheilk.*, Juli 1908, p. 10.

DR KURT BAGH describes the clinical history of four cases of multiple sclerosis, which he has recently studied in the clinic of Professor Uhtoff of Breslau; in all these cases optic neuritis preceded the general symptoms of the disease, the disturbance of vision caused by the neuritis being rapid in onset, and followed by a certain amelioration of the visual acuity; in one case the vision was only very slightly affected. In another case the optic neuritis preceded by ten years the outbreak of any other symptom of the disease proper.

Fleischer in his last communication on this subject thinks that when retrobulbar neuritis is present in young individuals, and no plausible cause can be assigned for it, such as some evident inflammatory condition or intoxication, that a diagnosis of multiple sclerosis would with great probability be correct if made in 90 per cent. of such cases. According to Gevers of Berlin, the percentage of cases of retrobulbar neuritis (excluding those due to intoxication) in which multiple sclerosis is the casual condition may be put down at sixteen. Dr Kurt Bagh thinks that this percentage is rather under the mark. He is impressed with the importance of optic neuritis as an early symptom which may lead to an early diagnosis of multiple sclerosis, even failing the epigastric reflex.

E. M. LITHGOW.

CEREBRAL TUMOUR IN THE REGION OF THE ISLAND OF REIL, (27) AND FIRST TEMPORAL CONVOLUTION REMOVED BY OPERATION. (Ueber eine operativ entfernte Hirngeschwulst aus der Gegend der linken Insel und ersten Schläfenwindung.) H. OPPENHEIM und F. KRAUSE, *Berl. klin. Wochschr.*, Nov. 16, 1908.

THE case was that of a woman, aged 37, who for five months had suffered from headache, chiefly over left eye; from loss of memory, disturbances of speech, giddiness, thirst, and depression. After admission to hospital she had severe headache, vomiting, and a slow pulse, well-marked sensory aphasia, no hemianopsia, but well-marked double optic neuritis, more marked on the left side. There was distinct paresis of the lower part of the face on the right side, otherwise no motor or sensory disturbance on the right side of body. There was tenderness on percussion over the left temporal region, and lumbar puncture showed greatly increased tension.

Diagnosis.—Tumour in the left cerebral hemisphere, probably in the region of the left temporo-sphenoidal lobe.

Professor Krause operated by two stages. By the osteoplastic method a large flap was reflected downwards in the left temporal region. The next day, as the patient's symptoms were urgent, she being practically comatose, the tense dura mater was opened, and a large tumour, overlapped above by the operculum, below by the first temporal convolution, and pressing inwards on the Island of Reil, was found. It was easily shelled out and, as far as could be seen, the entire tumour was removed. It measured 60 mm. in sagittal, 56 mm. in vertical, and 43 mm. in horizontal diameter, was histologically found to be a sarcoma, and probably grew from the membranes.

Patient did well for some days after the operation, but on the eleventh day almost complete paralysis of the right side of the body and absolute aphasia set in, apparently due to œdema round the field of operation. After this, patient steadily improved, and four months after operation could walk, and the aphasia was present only in slight degree. Eight and a half months after the operation, however, she suddenly developed symptoms of cerebral compression, with paresis of the right side of body and vomiting. Optic neuritis found on left side. Osteoplastic flap again turned down, and a tumour similar in nature, size, and situation to the primary one was removed. Patient made a rapid recovery from the second operation, and three months later was in good health, doing ordinary housework, but still having well-marked aphasia. The writers consider that the recurrence was almost certainly due to a portion of the primary tumour having been left behind at the first operation. D. P. D. Wilkie.

A CASE OF ANEURYSM OF THE ANTERIOR CEREBRAL (28) ARTERY. A. Salusbury MacNalty, *Lancet*, Dec. 5, 1908.

The patient, aged 28, was attacked with severe vertical headache and vomiting while at work. He walked home, and in bed had an attack of unconsciousness lasting twenty minutes; occipital headache and further attacks of vomiting occurred on subsequent days.

Ten days later, admitted to hospital with gradual failure of sight and increasing weakness in upper and lower limbs.

On admission the patient was quite rational. The left pupil reacted to light; the right pupil only on indirect stimulation. Blindness of right eye; slight weakness of left masseter; paralysis of external recti; double ptosis; facial weakness on left side; hearing diminished; optic neuritis, with hæmorrhages in the disc in the left eye; right fundus normal; motor weakness in arms and legs; some inco-ordination; superficial reflexes absent; knee jerks absent.

Albumen in urine, which disappeared on the third day after admission.

The patient was kept in bed and given antispecific treatment.

Nine days later he showed atopognosis and astereognosis, paralysis of both superior oblique muscles of the eyeball, and occasional athetoid movements in the hands.

His general condition improved, and he regained some power in the limbs.

He died very suddenly on the sixteenth day after the onset of his symptoms.

Post-mortem the aorta and coronary arteries were atheromatous, as were also the arteries at the base of the brain.

A ruptured, thin-walled, saccular aneurysm, about the size of a small cherry, was found in the left anterior cerebral artery, just after it had given off the anterior communicating branch. It had caused disorganisation of the adjacent brain substance, and had crossed the middle line to exercise pressure on the right optic nerve, presumably explaining the blindness of the right eye.

The blood had tracked round the optic chiasma and pons to the side of the medulla, and thence poured by way of the iter into the ventricles. The hæmorrhage extended down the cord as far as the third cervical root.

The diagnosis was based on the sudden onset, with vomiting and occipital headache, together with the remission of the symptoms. The etiology was presumably syphilitic.

A small rupture of the aneurysm probably occurred at the onset, accounting for some brown staining observed near the optic nerves; the second rupture was followed by immediate death.

The interest of the case lies in the rare condition and the period of sixteen days that elapsed between the primary rupture of the aneurysm and the fatal issue. AUTHOR'S ABSTRACT.

A SPECIAL DIAGNOSTIC PHENOMENON IN CEREBELLAR (29) DISEASES. ALFRED GORDON, *Journ. Am. Med. Ass.*, Vol. li., No. 6, 1908.

THE clinical reports of six cases are given, four of which came to autopsy. The phenomenon to which special attention is drawn was present in all the cases, and consists of an increase of vertigo and headache on forcibly turning the inclined head to the side of the lesion. The diagnosis was verified by the four cases which came to autopsy.

It is pointed out, in addition, that in four cases the head was turned to the side opposite the lesion during the entire course. In the other two cases the head was first inclined to the same side as the lesion, but some time before death it changed its position.

D. K. HENDERSON.

APRAXIC AGRAPHIA IN A LEFT-HANDED SUBJECT. (Apraktische Agraphie bei einem Rechtshirner.) (30) MEYER, *Zentralbl. f. Nervenheilk. u. Psych.*, Sept. 1908, p. 673.

A MAN of 46 suddenly had a cerebral hæmorrhage, and almost succumbed, lying for eight days in a comatose condition. On his recovery it was found that he was completely paralysed on the *left* side of the body, at least as far as the arm was concerned. The face and leg were less affected. He had considerable difficulty in speaking for a little while after the attack. The interesting and remarkable feature of the case is the difficulty the patient experienced in writing with the *right* hand for months after.

It was readily discovered that he was a left-handed ("right-brained") man, and that he had been taught to write with the right hand. He had never learnt or tried to write with the left hand. Without the slightest difficulty in understanding on his part, without the least motor disturbance of any other kind, his writing presented the following features:—

He can write each letter and each figure, all written very symmetrically and correctly. But he is totally unable to write the particular letter or number which he wishes to write, whether from memory, or to dictation, or from a copy.

He was asked to write the Lord's Prayer (*Vaterunser*). He wrote in German characters "Dasus un unst." The correct words of the first clause were written for him to copy, when he wrote underneath, "Astar Ferter dus du du im in." He could do nothing thereafter but write "in." He seemed to recognise his mistakes, but it frequently happened that he scored the error ou and repeated it again above. When he wrote in the air with his right finger, he made the same mistake as on paper.

Improvement gradually set in, and the phenomena disappeared.

The author thinks that the lead of the hand centre in the right hemisphere over the hand centre in the left hemisphere is interrupted by the lesion (which is clearly situated in the right hemisphere), and considers the case strictly comparable to a pure case of motor apraxia. The patient knows what he wishes to do with his right hand, but is incapable of performing the correct movement. S. A. K. WILSON.

CORTICAL SENSORY APHASIA, WITH PRESERVATION OF THE ABILITY TO READ.

(31) **(Kortikale sensorische Aphasie mit erhaltenem Lesen.)** SEMI MEYER, *Neurol. Centralbl.*, Sept. 1, 1908, S. 814.

A MAN with aortic valvular disease developed a sudden cerebral lesion. He understood nothing that was said to him and presented very pronounced paraphasia, his utterance being quite unintelligible. He was able, however, to read aloud almost correctly, although he understood nothing of what he read. He was unable to write. As was to be expected, he was unable to repeat what was said to him, nor could he write to dictation. He was able to copy fairly well. When reading or reckoning it had been remarked that he was in the habit of moving his lips. The author remarks that although in the great majority of persons during the act of reading the visual, auditory, and motor centres are successively called into play, this case belongs to the minority, in which the order is altered, the visual, motor, and auditory centres being successively stimulated. EDWIN BRAMWELL.

AN UNCOMMON CASE OF SPEECH DISTURBANCE AS A CONTRIBUTION TO THE DOCTRINE OF THE SO-CALLED AMNESIC AND CONDUCTION APHASIA.

(32) **(Ein ungewohnlicher Fall von Sprachstorung als Beitrag zur Lehre von der sogenannten amnestischen und Leitungsaphasie.)** FRITZ HEINRICH LEWY, *Neurol. Centralbl.*, Sept. 1 u. 16, 1908, Sn. 802 u. 850.

THE case described is that of a young subject who within twelve hours lost completely her spontaneous speech and was at the same time unable to repeat what was said to her. A corresponding degree of paragraphia was present, while her ability to understand spoken language and to read both silently and aloud was not appreciably interfered with. After six months there was almost complete recovery of the speech functions, a little difficulty in repeating unaccustomed words, which she read fluently, and slight paragraphia alone remaining.

After a digest of the available literature the author arrives at the conclusions that (1) so far as the available post-mortem material permits of a conclusion, no typical localisable lesion corresponds to the clinical postulated symptom-complex of conduction aphasia; (2) the so-called amnesic aphasia has no right to exist as an independent form of aphasia; (3) the symptoms of the so-called amnesic aphasia may accompany all forms of aphasia, as they are only the expression of the diaschisis called forth by the lesion; (4) the uniform diminution of excitability brought about by diaschisis from an indifferent locality may determine a variety of pronounced disturbances according as the stimuli necessary in a given time for the stimulation of the various centres are unequally great in the case of these individual centres (each according to its capacity dependent upon situation and practice, as well as according to the degree of isolation (*ausgeschliffenheit*) of the individual connecting tracts). EDWIN BRAMWELL.

(33) A CASE OF TOTAL APHASIA FROM A SUBCORTICAL LESION OF BROCA'S AREA AND WERNICKE'S ZONE (Un caso di afasia totale per lesione sottocorticale della zona di Broca e della zona di Wernicke.)

CORTESI, *Riv. di Patol. nerv. e ment.*, Aug. 1908.

THE case was distinguished by the multiplicity of the lesions and their subcortical situation. It would appear to be doubtful whether any definite conclusions of any value can be drawn from it.

The patient, æt. 49, showed great mental weakness and presented a typical picture of total aphasia. There was practically no comprehension of spoken language. He could not name common objects. He was unable to write, and spontaneous speech was limited to the rare pronunciation of a single meaningless syllable.

He was unable to repeat anything beyond the first syllables of words addressed to him.

Both the lower limbs were spastically contracted and deprived of voluntary movement. The upper extremities were comparatively unaffected.

Post-mortem extensive cerebral atheroma, with multiple patches of softening, were found. The lesions may be grouped as follows:—

(1) Nearly complete destruction of the fibres radiating from the third frontal and the posterior, two-thirds of the second frontal, convolutions on the left side, with almost complete destruction of the frontal part of the arcuate fibres.

(2) Almost complete destruction of fibres radiating from the posterior thirds of the first and second temporal convolutions and the inferior part of the angular gyrus in both hemispheres.

(3) Degeneration of the whole of the middle fibres of the corpus callosum.

The authors attribute the demented condition of the patient to this latter lesion, the psychical impairment being much greater than would be accounted for by the aphasic symptoms.

The most important point in the case was the presence of a total aphasia, with absolute integrity of the cortex and with subcortical lesions of the areas of Broca and Wernicke.

F. GOLLA.

STEREOAGNOSIS AND TACTILE ASYMBOLY. ROSE and EGGER,

(34) *La Semaine méd.*, Oct. 28, 1908, p. 517.

THE recognition of objects by touch is a faculty which can be found to exist whatever be the skin area involved, but in practice the region where touch is called into play may be limited to the hands and fingers. The absence of this faculty in cases of infantile cerebral hemiplegia, where there is no defect of sensibility, shows that it is the result of experience; where the hand is paralysed, then the child cannot learn how to develop the power of recognising objects by touch.

Tactile perception is identical in every respect to perception exercised in any other sensory field. If we take the field of vision, for instance, the image-souvenir, the visual memory, of an object, say a book, is awakened by the sight of a book, and this perception consecutive to the memory of a previous impression *in the same sensory field* is known as primary identification. But the idea, the concept of the object is the result of the association of the visual image with other sensory images (tactile, auditory, kinæsthetic, etc.). The awakening of these inter-sensory associations is essential for secondary identification. Defect of recognition may therefore be due either to loss of the corresponding sensory memory image in any particular sensory field (hence mind-deafness, mind-blindness, etc.), or to isolation of the particular memory image from the related sensory images in other fields, and thus a patient may recognise the form, colour, etc., of an object, and yet be unable to form a concept of the object, to designate its purpose or mention its name.

Defects of the first type were called agnosia by Wernicke; of the second, asymboly. The authors propose to continue this terminology—in spite of certain criticisms—and to speak of agnosia (or cortical agnosia) for the first, and asymboly (or trans-cortical agnosia) for the second.

Liepmann, however, has made another distinction which is very instructive. He considers the above two types as *agnosia by dissolution*: there is failure of recognition from loss of a given sensory image of an object or from separation of that sensory image from the related sensory images which together form the idea of the object. He uses the term *agnosia by disjunction* (ideational agnosia) for that condition in which *all* the sensory images of *part* of an object are separated from *all* the sensory images of *another part* of the object, and thus the patient cannot form a concept of the object *in toto*. To take a crude instance, the patient may recognise the head of an animal, but not its body or its limbs. If we take the same instance to exemplify agnosia by dissolution (sensory agnosia), the patient may recall all the sensory memories of the *whole* animal in *one* field, say the visual, but not the tactile, auditory, etc., images; hence, again, his recognition is incomplete.

If we come now to tactile recognition, what exactly is signified by stereognosis?

We must remember that to-day a sensory examination, to be complete, includes touch, heat and cold, pain, pressure, the muscular sense, the localisation of touch, tactile discrimination (distinction of the points of a compass), spatial cutaneous sensibility (appreciation of the distance of two points touched), and osseous sensibility. In the authors' opinion, it is not permissible to speak of astereognosis where there is any important defect of these various modalities of sensibility. Wherever there is a notable diminution of peripheral sensibility, specially of the deep variety, we know that the patient cannot recognise the form of objects. In cortical lesions, with sensory defects in the limbs, the pathogenic explanation of the so-called astereognosis is the same, for tactile recognition is at fault only in the anæsthetic fingers. *In order to have primary tactile agnosia, or astereognosis, sensibility must be intact, and yet the patient must be unable to recognise the form, consistence, smoothness, roughness, etc., of the object. Primary tactile identification consists in the recognition of these qualities.*

In a survey of many reported cases, the authors conclude that no case of true astereognosis, pure primary tactile agnosia, exists, except those of infantile cerebral hemiplegia occurring at a very early age.

Tactile asymboly (inability to recognise an object in spite of recognition of its stereognostic qualities) is an equally controversial subject. One apparently pure case, excellently observed, is given by the authors, who say they know only of one other equally pure case in the literature. They question very gravely whether any localising value whatever is to be attached to the occurrence of primary tactile agnosia and secondary tactile agnosia; they doubt whether any localisation of such a complex as stereognostic perception is theoretically probable.

S. A. K. Wilson.

DISTURBANCES OF THE NATURE OF AGNOSIA. (Über die (35) agnostischen Störungen.) Liepmann, *Neur. Centralbl.*, July 1 and 16, 1908, pp. 609 and 664.

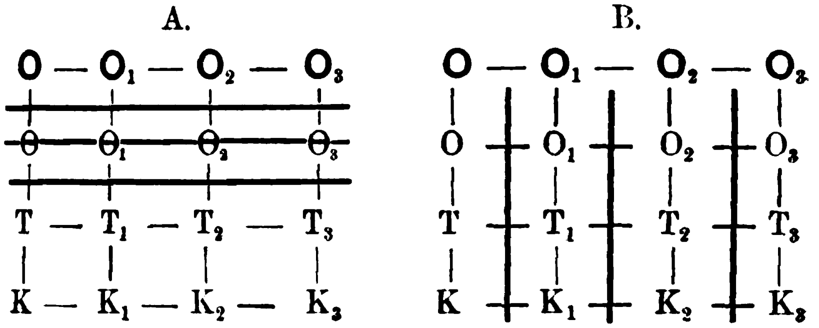
This paper is an elaboration of the author's previous work on agnosia, and it must be read in the original by any who wish to follow the present-day development of this subject.

Briefly, it consists of a demonstration of a new way of analysing the process of intellectual recognition, a method which has been previously sketched by Liepmann and has been considered in detail by Kleist.

If we see a dog, we have a visual picture of it, in which form and colour are prominent. If we stroke it, we obtain a tactile and kinæsthetic impression of its shape, of the softness of its coat, and thermal impressions also; if we hear it bark we obtain an auditory impression, and we may probably also receive a sensory impression in the field of smell. If now one sees a dog, but has lost the visual memory picture of it, he is mind-blind (cortical variety of Wernicke), he cannot bring his visual impression and his concept "dog" together. If his visual memory picture of "dog" is preserved, but he cannot associate it with tactile, kinæsthetic, etc., memory pictures of "dog," he is again mind-blind (Wernicke's transcortical variety).

But there is another way of dividing the concept of an object, apart from its sensory qualities. "Dog" may be divided into "head," "body," "limbs," "tail," each of which is made up of visual, tactile, kinæsthetic components. Or "dog" may be divided into "skin," "bones," "bowels," etc., each of which is again a complex of certain sensory components. Should a patient be able to call up *all* the sensory memory images of a *part* of the animal, but not of the other parts, he is suffering from what Liepmann has called ideational agnosia. He here proposes the terms "dissolution-agnosia" for the former, and "disjunction-agnosia" for the latter, defect in recognition.

Thus:



$\mathbf{O}$ $\mathbf{O}_1$ $\mathbf{O}_2$ $\mathbf{O}_3$, etc., represent the visual impressions from the parts of an object, say a lamp, with its bowl, chimney, wick, etc.

O O_1 O_2 O_3 are the visual memory images of each $\mathbf{O}$.

The T's and the K's represent tactile and kinæsthetic memories of each.

In A the continuous horizontal lines indicate the lesion in "dissolution-agnosia"; in B the continuous vertical lines indicate the lesion in "disjunction-agnosia" (ideational agnosia).

S. A. K. WILSON.

SOME FURTHER OBSERVATIONS BEARING ON THE SUPPOSED THROMBOTIC ORIGIN OF EPILEPTIC FITS.

(36)

JOHN TURNER, *Journ. of Ment. Sc.*, Oct. 1908.

A SHORT paper replying to some criticisms and slightly amending some of the statements formerly made concerning the coagulation rate of the blood in epileptics.

It is now shown that in some epileptics the average coagulation rate is not quicker than in some other insane cases not suffering from epilepsy, but that just before or during periods of fits there is a marked quickening, often followed later on by a marked retardation (rebound effect).

Later researches on Macallum's method of testing for phosphorus have thrown grave doubts on its trustworthiness. It is pointed out that apart from this test there are other grounds indicating that the clot is a vital phenomenon and not a post-mortem or agonal appearance, or the result of status epilepticus.

(1) It is commonly met with in cases who have never been in status epilepticus.

(2) There is often a bulging out of the capillaries in the

position where it occurs, indicating that the clot has exerted pressure on the walls of these vessels during the process of coagulation.

(3) Actual rupture as the result of impaction.

(4) Existence of clotted masses half within and half without the lumen of a vessel, which points to a process of coagulation during the vital transudation of the plasma.

(5) The correlation of intra-vascular clotting in such a large proportion of epileptics' brains, with the fact that in such subjects there is during and before fits a marked tendency of the blood to coagulate rapidly.

The objection that stasis following impaction of thrombi would lead more often to gross atrophy of brain substance is met by the suggestion that the blocking is generally in the finest cortical vessels, and that although these are probably terminal, the cells they supply receive temporary nourishment from the lymph stream which bathes them, until the circulation is restored by the dislodgment or absorption of the thrombus.

Thrombi, which would readily pass through the larger capillaries of the other parts of the body, are liable to be impacted in the cortex on account of the small calibre of the capillaries in this region, which are often not more than 1 or 2 μ in diameter; whilst the diameter of capillaries of the other parts varies from 7 to 13 μ.

Reasons are given to justify the statement that the form of Betz cells generally met with in epileptics is an immature form and not either the cause or the result of the disease.

AUTHOR'S ABSTRACT.

SOME UNUSUAL SEQUELÆ OF CONVULSIVE SEIZURES IN (37) CHILDHOOD. F. J. POYNTON, *Lancet*, Oct. 31, 1908, p. 1291.

THE writer records two cases in which epileptic attacks occurred indistinguishable from idiopathic epilepsy; and later, after an interval, in one case of two years, jaundice developed with ascites, fever, meningeal symptoms, and death. Both these children were males, aged 9½ and 10 years respectively. Post-mortem examination showed in both cases large smooth livers, which were not cirrhotic, but had a curiously mottled appearance, due to red and yellow areas of disease. Microscopic examination showed severe parenchymatous changes in the liver cells. The kidneys showed early interstitial nephritis. The spleen in both cases was enlarged, and surrounded by adhesions. The renal, cerebral, and coronary arteries showed endarteritis obliterans. These results pointed strongly to congenital syphilis. In a third case, also a male, maternal syphilis was admitted, but this child recovered from the jaundice and enlargement of the liver. Anti-syphilitic remedies were employed on this occasion, and the writer inclined to the view that they assisted recovery.

The particular interest of these cases lay in the puzzling and apparently rare sequence of events—viz., first an epilepsy, then an acute hepatic illness of the type seen in acute yellow atrophy.

Two cases were next detailed in which, again, the history of congenital syphilis was most probably the outstanding feature in the causation. These illustrated the occurrence of a sudden hemiplegia on one side, followed later by an equally sudden one on the other. In both instances the children were younger than the preceding, being aged $2\frac{9}{12}$ and $2\frac{4}{12}$ years respectively.

In the first case, right hemiplegia, ushered in by convulsions, occurred at three months. Recovery from this was fair, and at two years, although spastic in some degree on the right side, the child could both walk and talk a little. The second hemiplegia (on the left side) occurred two years later, was sudden and without loss of consciousness. After this there was inability to speak, difficulty in swallowing, dribbling, and loss of power in the muscles of the back. Partial recovery again followed, but the condition was a very serious one, for the child had epileptiform seizures, could only make a few sounds, and remained so weak in the back as to need a Phelps' box.

In the second case there was a right hemiplegia at $2\frac{4}{12}$th years and a left hemiplegia at $2\frac{10}{12}$th years.

In this case also after the second attack there was well-marked pseudo-bulbar paralysis. The recovery was more complete, but some months later speech was restricted to elementary sounds.

The special interest lay in the occurrence of similar lesions occurring at distinct intervals suddenly on each side of the brain. The absence of heart disease negatived embolism, and the history in each case favoured the occurrence of a syphilitic endarteritis and thrombosis.

The first diagnosis suggested was polio-encephalitis superior, but the second attack in each case made this very improbable.

The next group of cases, three in number, aged eleven, sixteen, and fourteen months respectively, were examples of a sudden illness with convulsions and fever, followed by rhythmical movements, either unilateral or involving the whole body. The author, guided by the writings of Gordon Holmes on tremor, classed the movements with those due to lesions of the tegmental region of the midbrain. All these cases recovered from the illness and the tremor, and the differential diagnosis between this condition, which he looked upon as a polio-encephalitis and meningitis, was emphasised. The article concludes with observations upon convulsions and tubercular meningitis, syncope and petit mal, and the use of bromides in convulsive seizures.

AUTHOR'S ABSTRACT.

RELATION OF SO-CALLED OPHTHALMIC MIGRAINE TO (38) EPILEPSY. A. A. HUBBELL, *Journ. Am. Med. Ass.*, Vol. li., No. 6, 1908.

THE writer advances the opinion that there is absolutely no relationship between these two affections. In support of his claim he states that since 1888 he has had fifteen hundred migranous patients, none of whom had epilepsy, and neither had it existed in any of their ancestors or descendants.

D. K. HENDERSON.

A CASE OF NEURASTHENIA COMPLICATED WITH (?) (39) "VASO-VAGAL ATTACKS." MILDRED M. BURGESS, *Lancet*, Dec. 12, 1908, p. 1743.

THE patient, a nurse, aged 39, with definite neurasthenic symptoms, but no signs of any organic disease, suffered for two years, following on a spell of very hard work and an attack of sunstroke, from what appeared to be "vaso-vagal attacks" of the type described by Gowers. These attacks, which followed, though not generally immediately, on any extra exertion, were first at considerable intervals, later nearly every other day. They came on quite suddenly, with a sense of extreme fatigue, amounting almost to loss of power. The extremities were cold, and the skin pallid and dry. Consciousness was not lost, but there was a sense of impending death. The pupils were dilated. The pulse became exceedingly infrequent, of low tension and almost imperceptible; breathing was shallow and rapid. The attacks usually lasted about ten minutes. The mental state was unstable, often like the first stage of alcoholic intoxication; this would be followed by a stage of extreme depression, with or without a definite "vagal attack." Both the excitable and the depressed states began and ended suddenly. On a prolonged modified Weir-Mitchell treatment the attacks have become very much rarer. Comparing the case with those of Gowers' it is interesting to note:—(1) Absence of pain, tetanoid spasm, rigor, or tingling. (2) No loss of consciousness. (3) Presence of sense of impending death. (4) Sudden sense of physical fatigue at the onset.

J. H. HARVEY PIRIE.

(40) THE SIMULATION OF PEMPHIGUS IN HYSTERIA. (Pemphigus hystérique simulé.) DANLOS, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, 1908, p. 560

IN every case of hysterical pemphigus which Danlos had seen, probable or certain simulation existed (*cf. Rev. of Neurol. and Psychiat.*, 1908, p. 426). The present case was no exception. A girl, aged 16 years, presenting numerous stigmata of hysteria, was admitted to hospital with a bullous eruption which had developed a fortnight previously. A similar attack, following on some annoyance, had occurred two months before. About a dozen lesions were scattered over the trunk and limbs, chiefly on the right side. Some of the bullæ were surrounded by minute black greasy spots, examination of which showed fragments of cantharides and exactly resembled the appearance presented by emplastrum cantharidis as seen under the microscope. The patient was kept under observation, and no further eruption developed. J. D. ROLLESTON.

(41) SIMULATED FEVER AND PATHOMIMESIS. (Fièvre simulée et pathomimie.) MALLOISEL, *Jour. de méd. et de chir. pract.*, 1908, p. 677.

THE case recently recorded by Dieulafoy (*v. Rev. of Neur. and Psych.*, 1908, p. 567) reminds Malloisel of three similar cases. (1) A girl was admitted to hospital complaining of severe abdominal pain. The temperature ranged from 101°·2 to 104°·8. Colpotomy was performed, but nothing was found. The temperature kept high. Preparation was made for laparotomy when the patient began to have hæmoptysis. The temperature was then taken by four different thermometers. The two which were held by the patient marked 104° and 100°·8, while those held by the doctor registered 98°·4 and 98°·6. She then admitted that the hæmoptysis had been produced by pricking the gums with a pin. (2) A woman, aged 20, was admitted to hospital with ill-marked signs of sciatica. The temperature kept at 100°·4 for about two and a half months. She appeared to be improving, when she complained of violent abdominal pain, tenderness over M'Burney's point, and vomited. Temperature 102°·2; pulse 80. The same condition continued for several days. One night the pain appeared so severe that the appendix was removed, and was found both macro- and microscopically healthy. Slight improvement ensued, and then there was a return of pyrexia and abdominal pain. Deceit was suspected, and it was found that while the thermometer entrusted to the patient registered 101°·2, that held by the doctor marked only

98°·6. She then confessed that she had sent up her temperature so as to remain in hospital. She was discharged the same day. (3) A woman, aged 26, who had already undergone two operations, in one of which a healthy appendix had been removed, was admitted to hospital with symptoms suggestive of infective endocarditis. In spite of three intravenous injections of collargol, and a series of subcutaneous injections of serum, the patient got worse. The temperature was 108°, and there was obstinate vomiting. After some time the symptoms subsided. It subsequently transpired that the vomiting was simulated by ejection of milk from her mouth, and that the high temperature was produced by a hot bottle. J. D. ROLLESTON.

THE CONDITION OF THE BLOOD IN EXOPHTHALMIC GOITRE (42) AND IN "FORME FRUSTE." (Ueber das Blutbild bei Morbus Basedowii.)

GORDON and TAGIC, *Wien. klin. Wchnschr.*, Nov. 12, 1908, S. 1589.

AFTER alluding to the fact that no uniform blood changes have been described in Basedow's disease, the authors draw attention to the blood changes in cases of this condition of long standing but not of great severity.

Following Stern, they emphasise the essential differences between the classical forms of exophthalmic goitre and the partially developed forms or "Formes Frustes," or Basedowoid conditions, but do not find any reliable differences in the blood condition.

The practical importance of a mononuclear leucocytosis is pointed out, but the authors agree with the findings of Kocher as regards the red cells and the hæmoglobin. The change in the numbers of the white cells is regarded as an expression of abnormal lymphatic activity having no relation to the bone marrow.

Reference is made to the occurrence of lymphatic and splenic enlargements, as described by Gowers and Kocher.

Tables illustrating the blood changes in certain cases are given.
W. KELMAN MACDONALD.

THE INFLUENCE OF DIET UPON THE METABOLISM IN (43) EXOPHTHALMIC GOITRE. (Ueber den Einfluss verschiedenartiger Diätformen auf den Grundumsatz bei Morbus Basedowii.)

PRIBRAM and PORGES, *Wien. klin. Wchnschr.*, Nov. 12, 1908, S. 1584.

TWO cases are presented in which the authors have investigated the influence of diet upon metabolism in exophthalmic goitre. Tables and details of the experimental dieting are given.

The oxygen output in nitrogenous and carbohydrate diets is discussed, and the explanation of the diminished oxygen output in the former is sought in the using up of oxygen in the production of such substances as acetone.

To the thyroid gland an important part is assigned in the regulation of the nitrogen metabolism in this condition, in contradistinction to the part played by the pancreas in carbohydrate metabolism. X-rays are shown to have little, if any, effect upon the output of oxygen in exophthalmic goitre, and the authors conclude:—

(1) That the general metabolism is not influenced by an abstention from a nitrogenous diet, and therefore there is no particular indication for a vegetarian diet.

(2) That excess of nitrogenous diet without carbohydrate causes an increase of general metabolism.

(3) That X-rays, in spite of increased body weight of the patients, do not have much influence upon the metabolism in this disease. W. KELMAN MACDONALD.

ANGIO-NEUROTIC ŒDEMA AS A FAMILIAL CAUSE OF SUDDEN (44) DEATH.

ARTHUR J. WHITING, *Lancet*, Nov. 7, 1908, p. 1356.

THE writer gives a short note of three cases of angio-neurotic œdema, one of which was remarkable in having a special sense aura, in the form of a metallic taste with dryness of the mouth, some hours before the œdema affected the tongue and inner side of the neighbouring cheek. Another case was that of a man, aged 33, who, since the age of six, when he had scarlet fever, had been subject to periodic attacks of localised œdema in various parts of the body, including, in childhood, the face and throat. Frequently the swellings were followed after two or three days by attacks of violent colic, for which there was no obvious cause. The swellings were apparently often induced by chill or slight tissue injuries. There was no family history of the condition in this case.

On Saturday, November 21, 1907, he had a bicuspid tooth skilfully extracted. The following day there was slight soreness of the gum and swelling of the cheek, but he felt well and took a long cycle ride. The same afternoon the swelling extended to the cheek and to the eyelids of that side. In the evening the neck and throat became swollen, but the man went to bed without apprehension, expecting the swelling to subside as it had done in childhood. He fell asleep and breathed heavily. About 2 A.M. he sprang out of bed saying he was choking, called excitedly to his wife to put something or other down his throat, tried to put his own finger down, lay down on the bed, and died while his wife was going for help. When Dr Bazett, of Hendon (who has recorded notes of the case in the *Lancet* of October 12, 1907), arrived he was apparently dead from asphyxia. The parts about the glottis were felt, with the finger, to be very much swollen, and an attempt at artificial respiration was met with absolute resistance to the air exit and entry. At the necropsy there was found great swelling of the epiglottis and aryteno-epiglottidean folds, which looked then like flaccid yellow bladders pressed together in the middle of the triangular area they formed. The body organs were healthy. The only abnormal appearances, other than the swellings, were those of suffocation.

Whiting refers to two recorded cases in explanation of the abdominal symptoms, one, that of Morris, in which a stomach tube was passed during a crisis, and a large piece of very œdematous gastric mucous membrane removed by accident; and to that of Harrington, in which laparotomy was done during an attack of intestinal colic, and a 2½-inch thickening of the gut in its entire circumference was found. He refers to an analysis of 205 cases collected by M'Dowell, of Auckland, N.Z., while working at the North-East London Post-Graduate College, of which 110 were in family groups, and in the families of these 110 there were only 97 more individuals, so that more than half were affected. Of these 110 no less than 30 died from suffocation due to sudden obstruction in the airway. Whiting selects for mention, among other groups, Mendel's cases occurring in a family of 12 members, spread over four generations, of whom 9 were affected and 6 died from œdema of the glottis; and to the cases of Ensor, 33 occurring in 80 members of five generations in one family, and 12 having a fatal issue. Also to a case described by Morris, fatal in the same way at the age of twenty-three, in which tracheotomy had been performed for the same condition at seventeen and twenty-one. After referring shortly to the pathology, affinities, and diagnosis of angioneurotic œdema, he discusses its treatment, and mentions an instance in which in his hands great improvement was apparently due to the administration of thyroid extract, and raises the question whether in some of the throat cases an actual or potential tracheotomy should not constantly be worn, as has been recommended in cases of abductor paralysis of the larynx in locomotor ataxia. AUTHOR'S ABSTRACT.

DISTURBANCE OF MEMORY IN TYPHOID FEVER. (Contribution (45) à l'étude des troubles de la mémoire dans la fièvre typhoïde.)

R. GRAINDORGE, *Thèses de Lyon*, 1907-1908, No. 49.

EVERY variety of amnesia may occur during the evolution of or in convalescence from typhoid fever. The memory alone may be affected (simple amnesia), or the other intellectual faculties may also be involved (complicated amnesia), as in certain cases of aphasia and transformation of the personality. The amnesia may be regarded as a symptom of Korsakoff's psychosis, being not infrequently associated with polyneuritic symptoms. The gravity of the amnesia does not seem to bear a direct relation to that of the typhoid attack nor to that of the concomitant nervous manifestations. The prognosis is usually good, but it should be reserved in those who are predisposed by alcoholism, syphilis or epilepsy to further mental disturbance. Treatment consists in re-education. The thesis contains twenty-one cases, nine of which are original. J. D. ROLLESTON.

ALCOHOL AND THE INDIVIDUAL. HENRY SMITH WILLIAMS, (46) *M'Clure's Mag.*, Oct, 1908.

DURING the past few years many scientific investigators have attempted by means of definitive experiments to substitute knowledge for guesswork regarding the effects of alcohol upon the human system. Although these experiments tend to upset many time-honoured conceptions, the author contends that they furnish a basis for more rational opinion upon this subject.

Tradition places alcohol among the stimulants to digestion, assimilation, heart's action, muscular strength and mental activity, while actual evidence gained from the work of such men as Abel, Schumberg, Scheffer, Von Helmholtz, Dietl, Vintschgau, Stier, Hodge, Woodhead, and Kraeplin seems to show that it stimulates none of these activities. On the other hand, alcohol is everywhere depressive and inhibitory, especially to the higher functions, and properly should be classed with the anæsthetics and narcotics. Professor James states that the reason that alcohol is craved is because of its anæsthetic properties, obliterating a part of the field of consciousness and abolishing certain trains of thought.

Williams' conclusions are that in taking alcohol habitually (1) the individual tangibly threatens the physical structures of his stomach, liver, kidneys, heart, blood-vessels, nerves, and brain; (2) he undoubtedly decreases his capacity for work in any field, physical, intellectual, or artistic; (3) he in some measure lowers the grade of his mind, dulls his higher æsthetic sense, and takes the finer edge off his morals; (4) he distinctly lessens his chances of maintaining health and attaining longevity; (5) he may be entailing upon his unborn descendants a bond of incalculable misery.

This paper has been widely read, and has stimulated many well-informed observers to discussion through the agency of the medical journals and the daily press. C. H. HOLMES.

PSYCHIATRY.

THE ALCOHOLIC PSYCHOSES. CHRONIC ALCOHOLIC DELIRIUM. (Korsakoff's Psychosis.) SMITH ELY JELLIFFE, *N.Y. Med. Journ.*, Vol. lxxxviii., Oct. 24, 1908.

(47)

IN this clinical lecture an account is given of the present state of knowledge regarding Korsakoff's psychosis. Its general and focal symptomatology, clinical forms, and pathological anatomy are described. Treatment is also discussed, and some illustrative cases given.

A. HILL BUCHAN.

DELIRIUM TREMENS. (EINE KLINISCHE STUDIE.) WASSERMEYER (Kiel), *Arch. für Psychiat. und Nervenkrankh.*, Bd. 44, Heft 3, 1908.

(48)

IN this article the author discusses various aspects of delirium tremens, basing his study on 284 cases. Out of 180 cases, 125 had visions of animals, while 55 had other visual hallucinations. Large as well as small animals were seen. Tactile hallucinations occurred second in frequency; auditory in about probably half the cases; hallucinations of taste or smell were rare.

The ætiology of these, as well as of the loss of orientation and of other psychic phenomena, is discussed. Bodily symptoms are also treated of—tremor, cardiac, renal, gastro-intestinal changes, temperature, etc., being dwelt on. The author performed lumbar puncture in two cases of delirium and in two cases of chronic alcoholism, and found in the two former slight opalescence without lymphocytosis, the result in the two latter being negative. The average duration of cases of simple delirium was 3·25 days, of "abstinence-delirium" 2·45 days, and of cases complicated by infective diseases or bodily injury 4 days. A true relapse was only observed on two occasions. The difference between slight and severe forms of delirium is emphasised. Forensic aspects and pathological anatomy of the disease are discussed. The author does not favour the view that delirium tremens is of the nature of a special autointoxication, but looks on it rather as an exacerbation of chronic alcoholic poisoning. The exacerbation may be produced in one of these ways:—(1) When the organism, and especially the brain, can no longer overmaster the amount of alcohol taken. (2) Again, in chronic alcoholic poisoning the resistance may be lowered by acute infective diseases. (3) The sudden withdrawal of alcohol. In the last case the attack is usually shorter and more mild; 43·66 per cent. of the cases of delirium had epileptiform attacks; in

11·27 per cent. the delirium came immediately on the head of an attack, and in 6 per cent. within the first twenty-four hours. In 2·8 per cent. attacks followed during the delirium; in 4·6 per cent. two to four days elapsed after the seizure before fully-developed delirium appeared.

As to prognosis, 9·5 per cent. of the cases died, the majority of these having severe complications.

The so-called "severe" type had a mortality of 50 per cent., the chief danger in uncomplicated cases being heart failure. The majority of non-fatal cases recovered completely, but a small proportion passed into a chronic psychosis.

In the treatment of this disease chloral should be avoided. If recourse be had to narcotics, paraldehyde, veronal, or trional are preferable. Besides rest in bed, baths are to be recommended as a means of quieting the patient. Mechanical restraint should not be employed, not even hot packs. In extreme cases, and as the least of two evils, chloroform narcosis may be resorted to. While it would not be advisable to give alcohol to every chronic alcoholic patient admitted to hospital, with a view to avoiding "abstinence-delirium," yet in complicated cases, etc., alcohol may be administered as a heart stimulant. Its prophylactic use is also to be recommended in the case of alcoholic persons who are decrepit or injured, or who have undergone surgical operations.

A. Hill Buchan.

CONGENITAL SYPHILIS AND GENERAL PARALYSIS. (Kongenitale Lues und progressive Paralyse.)

(49) C. Müller, *Münch. Med. Woch.*, 1908, p. 1986.

Müller thinks that congenital syphilis exists in many cases of tabes and general paralysis in which the onset occurs at the usual time of life, but in which acquired syphilis cannot be proved. He records three cases of general paralysis, in one of which the existence of congenital syphilis was certain and in the others probable.

(1) A woman, aged 42, virgo intacta, with saddle-nose, Hutchinson's teeth, sabre tibiæ and deafness, was admitted in an advanced stage of general paralysis. Four other children in the same family had died during the first month of life. She had had coryza at birth and ulcers on the tibiæ at thirteen years of age. For the next twenty-nine years she had been in good health and been able to work.

(2) A woman, aged 43, also virgo intacta, was admitted with definite evidence of general paralysis. Twenty-five years previously she had suffered from double iritis, which was cured by inunction.

Her brother had had optic neuritis, which yielded to mercury, and afterwards showed signs of spinal disease.

(3) A man, aged 53, developed general paralysis after suffering for thirty-five years from vesical and ocular troubles which several neurologists had regarded as tabetic. He showed no external signs of congenital syphilis, but his denial of the acquired disease was accepted as true. The autopsy confirmed the diagnosis of general paralysis. J. D. ROLLESTON.

MELANCHOLIA IN CHILDREN, WITH REPORT OF A CASE.

(50) J. D. BRIDGER (Memphis), *Memphis Med. Monthly*, Oct. 1908.

A GIRL of 3 became dull and inactive after alleged ill-treatment in an institution; she was removed to a day nursery, and came under the care of the author. Her physical condition was good, she ate and slept well, showed no particular displeasure whatever was said or done to her. It became gradually more noticeable that she lacked interest in the things which pleased the other children in the nursery, she would not play, sat all day in the corner, maintained awkward positions, would eat only when the food was placed in her hand, would never take anything from her plate voluntarily, not even candy. It required the dictation of the nurse for the bladder or the bowel to be evacuated.

Finally at the height of the condition she became motionless in bed, took no notice in her surroundings, would not smile nor speak a word. Cutaneous stimulation caused little or no reaction, even painful stimulation was tolerated without movement. There was some slight resistance to passive motion, and the limbs, especially the arms, were likely to remain in positions given them. Once when watched from a back window, without her knowledge, her arms remained in a given position for an hour. She had the appearance of one hypnotised, but she responded to commands, and her mind was always submissive.

The condition lasted about three months and gradually disappeared, the cataleptoid state being the first to go; then she became brighter, more talkative, until she returned to her normal condition. The treatment consisted in good food, good air, good nursing, cheerful surroundings, and small doses of the iodid of iron. C. H. HOLMES.

DEMENTIA PRÆCOX. ROBERT JONES and A. R. URQUHART, *Journ. of Ment. Sci.*, Oct. 1908, pp. 651 and 661.

(51)

THESE two papers were written to introduce a discussion on the subject of dementia præcox by the Medico-Psychological

Association. Both are against Kraepelin's view of this disease, as, in fact, are the majority of older British alienists.

In Dr Jones's paper the view is taken that Kraepelin's dementia præcox is nothing new. Esquirol described it as acquired imbecility—a good term, he thinks—and Christian as juvenile dementia. He objects to the use of the term dementia in a class of cases many of whom recover. Strictly speaking, dementia involves the idea of permanent impairment of mind, and undoubtedly it is most desirable to be accurate in the use of scientific terms, but practically it is not always easy of attainment. As Dr Urquhart points out in his paper, the term melancholia would have to be abandoned were strict accuracy to be adhered to. The term consumption is also an illustration of how the name of a disease often remains after fuller knowledge of its pathology has made its use to be unscientific and misleading. Moreover, Kraepelin has distinctly recognised this objection and stated his willingness to adopt any better name which can be suggested.

Dr Jones's next criticism is directed to Kraepelin's sub-division of *dementia præcox* into three varieties. There is much force in some of his remarks, but he seems to forget the acknowledged difficulty in getting clear-cut distinctions in all forms of mental disease. He also objects to the introduction of so many new terms by Kraepelin in describing mental symptoms. But may not the coinage of new terms be an evidence of a desire to be more strictly scientific in description and definition, a desire which Dr Jones himself has previously expressed a wish to see fulfilled? One of Dr Jones's final criticisms is perhaps too stringent. Because *dementia præcox* has as yet no definite pathology is surely not a valid reason for refusing to recognise it at all. Dr Jones's conclusions, which he summarises at the end of his paper, are all decidedly adverse to Kraepelin's classification.

Dr Urquhart's paper is equally against it. He asks, "Is the association to indicate a preference for the new importation? I hope not." His first objection is similar to that of Dr Jones, being directed to the precise meaning of the term dementia. He gives interesting and valuable statistics regarding adolescent insanity and dementia as he has met with them. He shows that in adolescent insanity about 70 per cent. of cases in the long run end in dementia. The bearing of his figures on the question under review is, however, not altogether direct, as Kraepelin's *dementia præcox* is not quite the same thing as adolescent insanity. It seems rather that Kraepelin has seized on the "tendency to dementia" which Clouston described in 1873 as a marked characteristic in adolescent insanity, and has endeavoured to discover in what respect such unfavourable cases resemble each other in other mental characters than the final ending in dementia. He thinks such cases have a series of common symptoms, and calls it *dementia præcox.* Because all cases presenting such symptoms do not end in becoming demented is no more remarkable than that all general paralytics do not reach the same end.

Dr Urquhart, in closing his paper, states his opinion that *dementia præcox* does not strengthen one in diagnosis, in pathological understanding, in prognosis, nor in treatment. He would exclude it from the country as an undesirable alien.

JAS. MIDDLEMASS.

(52) DEVELOPMENT OF THE LEGAL RELATIONS CONCERNING THE INSANE, WITH SUGGESTIONS FOR REFORM. A. HAMILTON, *New York Med. Rec.*, Nov. 7, 1908.

THE author comes to the following conclusions:—

(1) There should be obligatory information of the commissioner in lunacy in regard to the existence of all cases of insanity.

(2) Though the commissioner in lunacy may have power to license private institutions, he should also be empowered to formulate additional requirements which would put some of them on a much higher standard than they occupy at present.

(3) Commitments are chiefly to be looked on as reinforcements by the judge of the persuasions extended by the friends, physician, and family of the patient, and should be resorted to only when the latter cannot be persuaded to go to an asylum.

(4) Everything should be done to make the appeals of the committed patients available. There should be severe punishment for the suppression of letters, or interference in any way with the alleged lunatic's rights.

(5) There should be material reform in the attitude of the law regarding capacity and criminal responsibility, insane acts in themselves, in any relations they may have, receiving more weight than heretofore.

(6) There should be a departure from conventions in old and arbitrary definitions.

(7) Special insane acts should be studied with reference to the crime itself in a way they have not been studied up to the present time.

(8) The attitude of the court should be much more charitable to the medical witness than it is to-day—the intelligent medical man being put in possession of all the facts in the case, and not being obliged to answer restricted questions which place him in a false position, and which are deficient in the presentation of the facts.

(9) In all matters involving the determination of capacity or

responsibility, the medical man should be required to prepare a brief which should form the basis of his cross-examination, and this, if necessary, must be supported by extraneous evidence, which has received the sanction of the court, as to heredity, previous history, and facts communicated by others.

C. H. HOLMES.

OBSERVATIONS ON ENDEMIC CRETINISM IN THE CHITRAL (53) AND GILGIT VALLEYS. M'CARRISON, *Lancet*, Oct. 31, 1908, p. 1275.

THIS study of endemic cretinism is based on an analysis of 203 cases, and from it the author draws the following conclusions, which, it should be remembered, refer only to cretinism as it prevails among the Chitrali and Gilgiti races:—

1. The degree to which cretinism is associated with goitre is determined by the age of the endemic, and varies directly with the extent to which the latter disease prevails among the adult population.
2. Cretinism is rarely if ever due to the development of a goitre in the individual. The thyroid enlargement is, or may be, an effect; it is not the cause of the disease.
3. Defective thyroid function in the mother is the essential factor in the production of cretinism.
4. Cretinism is due to the action of toxic agents, notably that of endemic goitre, on the developing thyroid of the unborn child.
5. The thyroid defect is congenital, but it may remain latent pending its manifestation through the impulse of some accidental circumstance.
6. The defect in cretinism is one of the whole thyroid mechanism of the parathyroids as well as of the thyroid gland. The diversity of symptoms is due to the extent to which the defect bears on the whole or part of that mechanism.

THE PSYCHIATERS AND PSYCHIATRY OF THE AUGUSTAN (54) ERA. SMITH ELY JELLIFFE (New York), *Johns Hopkins Hosp. Bull.*, Oct. 1908.

IN the Augustine era conditions were no less favourable to the development of mental diseases than in the present era; human nature reacted to the emotions of anger and shame, jealousy and fear, as surely and violently then as now; drunkenness, debauchery, and excesses led as often to mental deterioration, paresis, and dementia.

Up to the first century before Christ, the knowledge of and the classification for mental diseases emanated from that distinguished father of medicine, Hippocrates, who recognised and described "phrenitis, mania, melancholia, dementia, and paranoia." His phrenitis was practically a febrile delirium, his manias largely miscellaneous excitements without fever, and his melancholias depressions, no matter of what type. In paranoia, which seemed to more specifically cover dementias, he also included at times phrenitis, mania, and melancholia. Mania sometimes meant simply a " bilious temperament."

During the first century the three men who stood out most prominently for their knowledge of insanity were Asclepiades, Themison, and Celsus.

Asclepiades was born in Bythinia, Asia Minor, about 120 B.C., studied medicine at Athens and Asia Minor, and started to practise in Rome at the age of twenty-four. It is said by Apuleius, in his "Florida," that Asclepiades first won renown by making a diagnosis of a probable hysterical stupor while the patient was being placed as a corpse on a funeral pile to be burned. He ordered the body to be removed from the pile and carried home, placed him under treatment, and he recovered. His classification was practically that of Hippocrates. He tried, however, to outline a better symptomatology and differentiation of type with ideas of prognosis. He recognised a non-febrile phrenitis, and epileptic phrensy, a lethargy; and he divided mania into two types, one with hallucinations and delusions, and another with delusions apart from such sensory symptoms. He considered hallucinations of central origin evidently, for in his treatment it is noted that he recommended light rooms, and stated that such patients often became worse after dark. He induced sleep by friction; "the use of wine makes one approach the power of the gods," in melancholia; a fall of water near, and the motion of a suspended bed, he found useful to some; bathing and massage were raised to the dignity of a cult. He died at the age of ninety by a fall, thereby winning a wager that he would never die from natural causes. He may justly be called the "Father of Psychiatry."

Themison reverted from the use of baths, massage, opium, and hyoscine to bleeding, and was dubbed the " Phlebotomist." None of his writings have been preserved.

Celsus' "Treatise on Medicine," 35-45 A.D., furnishes an excellent summary of the treatment of insanity after the beginning of the Christian era. The striking features of this work are his condemnation of restraint and commendation of certain measures which are now included under the term psychotherapy.

C. H. HOLMES.

LEUCOCYTOSIS: ITS RELATION TO, AND SIGNIFICANCE IN, (55) ACUTE MENTAL DISORDERS. COLIN M'DOWALL, *Journ. Ment. Sc.*, Oct. 1908, p. 669.

THE writer of this essay has investigated systematically the quantitative and qualitative changes in the leucocytes of about fifty cases of acute insanity. His results in a large measure coincide with Bruce's work on the same subject. In recent cases of excitement with confusion there was invariably a leucocytosis, which varied between 10,000 and 20,000. Secondary, or recurrent, cases did not show such a marked reaction. Leucocytosis in the senile is exceptional. An eosinophilia, which might reach 10 per cent., was found in all those cases of acute mania which did well. In depression with excitement there were found changes in the number of the white cells similar to those found in excitement with confusion. Regarding eosinophilia in this disease, Dr M'Dowall's results differ from Dr Bruce's, for the latter found an increase of the coarsely granular eosinophile cell, while the author of this paper found in the acute stage of the disease an entire absence of these cells. No sufficiently definite phenomena could be found in depression without excitement, though a leucocytosis of 18,000 was noted in a case which made a good recovery.

A case which ended fatally is interesting. As the prognosis became more and more hopeless the leucocyte count diminished, until two hours before death a leucopenia of 3500 was found. The writer attaches great importance to the coarsely granular eosinophile cell. The most favourable blood changes were a high leucocytosis with an eosinophilia found early in the disease. An eosinophilia with a low leucocyte count indicates a slow convalescence, but ultimate recovery. Several cases are described *in extenso*, but charts would have made the subject-matter easier to follow. AUTHOR'S ABSTRACT.

TREATMENT.

USELESSNESS OF ISOLATION IN NEURASTHENIA AND THE (56) NEUROSES. (Inutilité de l'isolement dans la neurasthénie et les névroses. Supériorité de la cure libre.) Dr PAUL-EMILE LÉVY, *Journ. des Practiciens*, Nov. 14, 1908, p. 739.

IN this paper the author, who has already inveighed against rest-cures in the treatment of neurasthenia, etc., cries out against what he calls the dogma of isolation. He protests from his own experience that this class of case can be treated much more successfully if free and mixing with his fellows. Suggestion and persuasion he regards as of little value. They may relieve or may even apparently cure at the time, but relapses are almost certain to occur again when life has once more to be faced in the open. Education is *the* treatment of the cause, and to be of permanent value this must be practical—face to face with the factors which have brought about the departure from normal—not theoretical, in solitude. A cure lies not so much in the disappearance or even attenuation of the symptoms as in the personal reaction to them becoming more and more conscious and vigorous, and this can only be satisfactory with a patient "living" and free, not with one immured and merely existing. Dr Lévy is just publishing a book on his "free" cure, to which we look forward for further details of his method and results. J. H. HARVEY PIRIE.

ROENTGENOLOGY IN NEUROLOGY. M. K. KASSABIAN, *Journ.* (57) *Am. Med. Ass.*, Vol. li., No. 9, 1908.

THE writer emphasises the diagnostic and therapeutic value of the Roentgen rays in certain neurological affections. Some of his conclusions are as follows :—

1. The Roentgen rays have been invaluable in detecting the etiology of nervous manifestations, the result of disease of the osseous system.
2. Changes occurring in the osseous system (resulting in neurological symptoms) are readily detected.
3. The differential diagnosis between epiphysitis and neuritis is readily accomplished, as is also the diagnosis between osteitis and periostitis.
4. The value of the Roentgen rays is of paramount importance in determining changes occurring in the articular system, as in the study of arthropathies and spinal joint affections.
5. Brain tumor, clots and cysts are difficult of interpretation.
6. A diagnosis can frequently be made between aneurisms and mediastinal tumors.
7. The therapeutic action of the rays is evidenced in their analgesic action, in their palliative and often curative effects in neuralgia, and in their causing an absorption or decrease in size of various growths and neoplasms. Painful pressure symptoms are thus mitigated. D. K. HENDERSON.

LUMBAR PUNCTURE AND ITS DIAGNOSIS AND THERAPEUTICS.

(58) EBRIGHT, *Journ. Amer. Med. Assoc.*, Nov. 7, 1908, p. 1566.

In this paper a means is given of making observations of the pressure of the cerebro-spinal fluid in terms of mercury rather than in terms of spinal fluid.

The apparatus, which is described in the text, is a modification by the author of the apparatus used by Professor Pfaundler.

The removal of the manometer during the flowing of the fluid is obviated by the use of a T-shaped tube with a shut-off valve in two of the arms. The speed of outflow can be easily regulated, and manometric observations of the pressure are readily obtained during the outflow of the cerebro-spinal fluid.

After referring to the pressures obtained in various conditions, the author deals shortly with the cytodiagnosis of the spinal fluid and the uses of lumbar puncture as a therapeutic measure.

W. KELMAN MACDONALD.

PALLIATIVE TREPHINING IN CHOKED DISC. (Die Palliativtrepanation bei Stauungspapille.)

(59) EUGEN V. HIPPEL (Heidelberg), *Muench. Med. Wochenschrift*, No. 37, Sept. 15, 1908, p. 1916.

In this paper Professor v. Hippel gives an abstract of the clinical part of his paper which has since appeared in *Graefe's Archiv für Ophthalmologie.* He was moved to review the results of decompression operations by a case of his own, which died, as he now thinks, by the employment of a defective method of operation. He analyses very fully 221 cases, from the literature, in which trephining was done without removal of any tumour, either because no tumour could be found, or because, though found, it was not removable, or, thirdly, cases which in their intention were simple decompression operations.

Unfortunately he found that in many cases important details as to vision, amount of swelling, and results of the operation were awanting in the reports.

Of the 221 cases, 53 died at, or as an immediate result of, the operation. Of the remaining 168, the papillitis subsided in 100, in 18 it did not subside, while details are wanting in the rest. In only 24 cases was there useful vision before the operation. In one of these the sight became worse (from direct pressure on the optic tracts), and in 21 cases the vision was preserved or improved. In 92 cases vision was practically gone before operation (less than $\frac{6}{60}$).

In 14 cases was there a definite improvement. In 26 cases, in which the details of the vision before the operation are awanting, improvement of vision as the result of operation is reported. On the whole, then, there are 61 cases in which visual acuity was preserved or improved as a result of decompression, though in 6 this result was only temporary. These numbers seem small, but it must be noted that in a great majority of cases the operation took place at a very late stage in the history of the papillitis.

The conclusion from these numbers is that the outlook for vision is good if the operation takes place at a relatively early stage while there is still useful vision, but that if operation is deferred until vision has failed (less than $\frac{6}{60}$), then the visual prognosis is bad.

Von Hippel proceeds to consider the cases of optic neuritis in cerebral diseases other than tumour, *e.g.* syphilis, chronic hydrocephalus, the so-called pseudo-tumour of Nonne, and the cerebral swelling of Reichardt (*Hirnschwellung*), as well as in skull deformities, such as tower skull. And he thinks that though in many of those cases spontaneous healing may take place, it is sometimes only after much loss of sight has occurred, leaving the patient practically blind. Not only in some of these cases will a decompression result in subsidence of the neuritis, but it will also aid in healing the disease.

A review of the 168 cases as regards duration of life shows some interesting points. Of the 61 cases where the vision was preserved or improved, 41 lived more than six months, 31 more than a year, 25 more than two years, 6 from three to five years, and apparently cured, 10. Of the 56 whose vision remained practically useless 11 only lived more than six months, while 44 lived less than six months. Of the 11, 10 lived more than a year, 7 more than two years, 5 from three to five years. Including the cases where details of vision before operation are wanting, one finds that of the total 60 lived more than a year, of whom 26 were seemingly cured, 20 lived more than two years, and 11 lived from three to five years. This surprisingly high number of 26 seemingly cured requires a short explanation. It includes 11 cases of Horsley's, one of which was a malignant tumour, the other 10 tumours whose nature could not be determined, but the whole of which spontaneously disappeared after the trephining. These cases, though they are hard to explain, must, having regard to the importance of the authority by whom they are brought forward, be accepted.

The author considers that the immediate mortality (53 out of 221) of the operation is too high, because the majority of the cases were done in too late a stage. And this criticism also he would apply to von Bergmann's statistics, where 47·7 per cent. of deaths occur. He points out that of the 24 cases where the operation was done while there was still useful sight only 2 died.

He thinks that while we cannot tell the relations that the operation is without danger, it is only right that we should advise them to consent to it, since delay almost unavoidably will result in blindness. Whilst the outlook as regards vision in the right-sided operation is favourable, life is more frequently lengthened than shortened, the severity of other symptoms is diminished, and in cases which may ultimately be cured blindness is avoided.

The danger of the operation can be materially diminished by a number of precautions which have been devised by Horsley and Kocher. Briefly, these consist of chloroform anæsthesia, not ether, operating in two stages, the opening of the dura being deferred for some days; cocainising the dura before cutting it, so as to avoid irritation of its nerves; avoidance of all concussion of the skull; too brisk emptying of large quantities of fluid; avoidance of the osteoplastic method, and definite removal of a portion of the skull; and especially very careful closing of the flaps, so that any prolapse of the brain may be fully covered. He lays stress on the importance in these cases of not trying to prevent a hernia cerebri, since this must be regarded as a safety valve in cases where a very high intracranial pressure was manifested.

Subsidence of the papillitis in a few cases may take place without opening of the dura, but in the majority of cases this second part of the operation will be necessary. The subsidence of the papillitis takes place at very varying rates. In one case a swelling of 7 D. is said to have disappeared in three hours!

Lumbar puncture must play a very subsidiary role in producing subsidence of papillitis. In no case, where the diagnosis of tumour was certain, did it have any effect. Nor does the author think much of ventricular puncture without trephining.

In conclusion, von Hippel states that, at the present time, most progress can be made if in all cases of papillitis early right-sided trephining is advised. LESLIE PATON.

THE TREATMENT OF FACIAL NEURALGIA. (Le traitement de (60) la névralgie faciale.) M. J.-A. SICORD, *Presse Medicale*, Oct. 24, 1908, p. 682.

THE writer defines five degrees or stages of the disease:—

(1) The peripheral stage.

(2) The sympathetic stage, where vaso-motor crises are seen with hyper-secretion of saliva, tears or sweat.

(3) Stage of irritability of the facial nerve, with spasmodic myoclonus.

(4) Ganglionic stage, where the irritation has spread upwards to the ganglion, and though at first possibly localised to one branch of the fifth nerve, now affects all the branches.

(5) Cortical stage, where the irritation has spread to the cortical centre in the opposite hemisphere.

The surgical treatment varies according to the stage which the disease has reached.

Thus for stage I. it consists of section, re-section, or tearing out of or injection of alcohol into the peripheral branches; for stage II. excision of the superior cervical ganglion; for stages III. and IV. excision of the gasserian ganglion or section of its sensory root; for stage V. trephining over the cortical centre, with or without opening of the dura mater.

The results of section or re-section of the peripheral nerves are not good, rapid recurrence of symptoms being the rule. Injection of alcohol into the peripheral nerves gives very satisfactory temporary relief, and it can be easily performed under local anæsthesia or under ethyl chloride.

Excision of the superior cervical ganglion gives fairly good results, and may give relief for four or five years. It, however, does not give immediate relief, weeks and sometimes months elapsing before improvement is noted. It can be well combined with section of the peripheral branches of the trigeminal. Excision of the Gasserian ganglion is not to be recommended, as the operation is difficult and dangerous; it has a high mortality, and is very frequently followed by trophic disturbances in the eye. This operation is being rapidly displaced by the more rational operation of section of the sensory root of the 5th nerve. The latter operation is easier to perform, takes less time, does not endanger the cavernous sinus, and is not followed by ocular trouble.

Trephining over the fronto-parietal region of the opposite side has been performed on two occasions, but the value of this procedure is still doubtful. D. P. D. Wilkie.

FACIO-HYPOGLOSSAL ANASTOMOSIS. G. F. Cott, *Journ. Am.* (61) *Med. Ass.*, Vol. li., No. 6, 1908.

The hypoglossal nerve is selected in preference to the spinal accessory because the hypoglossal and facial centres overlap each other in the cerebral cortex, and are also in close association in the medullary centres. Complete recovery never results, but some positive signs ought to be obtained within six months. The technique of the operation is fully described.

D. K. Henderson.

Reviews

THE FREQUENCY OF DIPHTHERITIC PARALYSIS BEFORE AND AFTER SERUM TREATMENT. (Ueber die Häufigheit der postdiphtherischen Lähmungen vor und nach der Serumbehandlung.) J. MALYNICZ. Zürich: E. Speidel. Mark 1.20.

THIS study is based on clinical material at the Hottingen-Zürich Children's Hospital, and comprises the period 1883-1907. The paralysis percentage at this hospital before the introduction of antitoxin was 3·18, and since then has been 2·89. This low estimate forcibly suggests that no systematic research for paralysis was made in each case. The following conclusions, which can be most charitably described as fanciful, will be read with amazement by those familiar with the antitoxin treatment of diphtheria. "Cardiac paralysis is more frequent under antitoxin treatment, and is usually fatal. . . . Palsies, in the antitoxin period, begin more frequently in the extremities and other parts of the body than in the soft palate. . . . The mortality from diphtheritic paralysis since the introduction of antitoxin is considerably higher than before." . . .

No mention is made of the relation of the frequency and severity of the paralysis to the day of disease on which the antitoxin was given. Several authorities, including the reviewer, have conclusively shown that early injection makes paralysis less likely to occur, especially in a severe form. The bibliographical references are most inadequate. Among writers of the pre-antitoxin era we miss, among others, the names of Trousseau, Sanné and Cadet de Gassicourt, and of authorities since 1894 the most recent work quoted is dated 1902. Enough has been said to show that as a monograph on this important subject this is decidedly a disappointing production. J D. ROLLESTON.

NEURASTHENIA. GILBERT BALLET. (Translated from Third French Edition by P. Campbell Smith.) London: Henry Kimpton, 1908, 6s.

THE place which Ballet's (formerly Ballet and Proust's) work has taken in neurological literature, and the successive appearance of three editions, render it unnecessary to criticise the standpoint of the author, which differs materially from that of other recent French writers in the greater importance which he attaches to details of treatment in addition to psychotherapeutics, upon which others almost exclusively rely.

The work is divided into seven parts: 1, definition and nature of neurasthenia; 2, causes of neurasthenia; 3, symptoms and clinical forms of neurasthenia; 4, etiology; 5, prophylaxis; 6, treatment of neurasthenia; 7, treatment of some special clinical forms, such as the neurasthenia of women, and genital neurasthenia. Each section is treated with great fulness, but the chapters on treatment will be found of particular value. They include, of course, the method of Weir-Mitchell, but give full details for the treatment of cases of less severity that do not require the rigid rest cure.

The translator, Dr Campbell Smith, is to be congratulated upon the care and success of his translation. He has rendered the original into clear, terse, and vigorous English, which does not read like a translation, and he has enhanced the value of the volume by numerous notes, and also by an introductory chapter on the pathogenesis of the minor form of neurasthenia, which he regards as a matter of degeneracy, and on the treatment of some symptoms which have not, in his judgment, been sufficiently dealt with in the original.

Practitioners and specialists alike will find in this volume valuable practical guidance in dealing with cases of this disease.

RADICULITIS. (Les Radiculites.) PAUL CAMUS. Paris: J. B. Baillière et Fils, 1908.

IN this work, from the service of Prof. Dejerine, Dr Camus groups as a clinical and anatomical entity affections which have hitherto scarcely been clearly differentiated from diseases of the cord and of the peripheral nerves. The condition is one of primary inflammation of the nerve roots and of their coverings. The onset of the disease is generally gradual, and it is characterised by a group of symptoms sharply limited to the domain of the affected roots. Sensory phenomena are prominent: pain occurring in paroxysms, readily brought on by such an act as sneezing, and radiating towards the periphery; not prominent on pressure over the nerve trunks, and with an absence of marked tender points; hyperæsthesia; sometimes paræsthesia; and, later, anæsthesia to all qualities of sensation. From involvement of the anterior roots there is paresis or paralysis of certain groups of muscles—the distribution being of the radicular type—the paralysed muscles show no fibrillary tremor, but their electrical reaction is changed. The tendon reflexes in the affected area are diminished or lost; the muscles atrophy; trophic changes occur in the skin and bones also, and sometimes vaso-motor and oculo-pupillary troubles are met with. Lymphocytosis of the cerebro-spinal fluid is almost constantly present.

Clinically the cases may be classified according to the prominence of the sensory or of the motor symptoms, and according to their regional distribution—cranial, cervical, lumbo-sacral, etc. Disseminated and generalised forms also occur.

In diagnosis the topographical distribution of the symptoms is of prime importance. The diagnosis will have to be made from peripheral neuritis, poliomyelitis (acute and chronic), syringomyelia, tabes, pachymeningitis, and tumours of the meninges. All of these conditions have certain features in common with root inflammation.

Syphilis is the most important etiological factor, the involvement of the roots following on a localised meningitis. The next most common cause is tuberculosis.

Pathologically there is primarily an endo- and peri-neuritis, and in the immediate neighbourhood an inflammation of the various covering membranes; secondarily there is degeneration of the nerve elements. The fragility of the nerve roots must be remembered, especially at the site of their passage through the pia mater and at the level of the junction of the anterior and posterior roots. The duration of the cases is usually lengthy, and there is not infrequently recurrence. In view of the etiology an early diagnosis is of importance, since energetic anti-syphilitic treatment (inunction or injection of mercurials) leads to effective cure in most cases. The volume is well illustrated by cases.

J. H. HARVEY PIRIE.

LA COUCHE OPTIQUE. (ÉTUDE ANATOMIQUE, PHYSIOLOGIQUE ET CLINIQUE): LE SYNDROME THALAMIQUE. GUSTAVE ROUSSY. Paris: Steinheil, 1907, pp. 371.

A THESIS such as this forms no inconsiderable contribution to our knowledge of the anatomy and physiology of the optic thalamus: it is one more of the now long list of theses emanating from the Parisian school which have taken an abiding place in neurology. The work is conspicuous alike for its lucidity of style and its method of arrangement: like many of the theses already referred to, it is formed upon an anatomico-clinical basis.

Apart from a historical and anatomical introduction, the former of which serves to show the remarkable difference of opinion which still obtains as to the actual functions of the optic thalamus, the first part of the thesis is taken up with experimental work on the thalamus, in monkeys, cats, and dogs, the method employed being that of bipolar electrolysis. The symptoms obtained were circus movements, alterations in superficial and deep sensation, with loss of the knowledge of the position of the limbs, hemianopia, and in two cases disturbances of hearing.

In regard to the first of these, Roussy decides that the circus movements are dependent solely on a concomitant lesion of the cerebral peduncle. The sensory changes were hypoæsthesia, hypoalgesia, hypothermæsthesia, loss of the muscular sense, and loss of the stereognostic sense. As Roussy believes this is the first time astereognosis has been demonstrated in an animal, his method may be quoted.

"The ape's eyes being bandaged, cherries or nuts were placed in its left hand, or pieces of biscuit, and it was noted that while the animal took them and felt them, it did not bring them to its mouth. On the right side, however—the procedure being the same—the ape at once brought them to its mouth and ate them. The same experiment was repeated again and again, with the same result. If the fruit was placed in the right hand, and the latter was held, the monkey took the fruit out of the right hand with the left, and so ate it. Thus it was clear that no motor weakness of the left arm existed." "Il est donc incontestable que notre singe présentait de l'astéréognosie à gauche."

Yet, as always, it is the interpretation of admitted facts that proves the stumbling-block. Because an animal handles a cherry in its fingers but fails to bring the fruit to its mouth, it does not follow that it has failed to appreciate the roundness, softness, smoothness, etc., of the object. The sole presumption is that it has failed to recognise the object as a whole, which is not equivalent to saying that it has astereognosis. And in this connection we must remember the defects of superficial sensibility from which the animal suffered.

The hemianopia is the result of a lesion either of the optic tract, or of an external geniculate body, or posterior part of the thalamus. The auditory defect is not easy of explanation. The absence of paralytic phenomena, of contractures and other irritative signs, the perfect integrity of the function of expressing the feelings by gestures, are to be noted.

The second part of the thesis deals with the thalamic syndrome, and is rich in clinical documents and pathological confirmations.

The thalamic syndrome is characterised by—

(*a*) persistent hemi-anæsthesia, more or less marked in the field of touch, pain, and temperature, but always pronounced in regard to deep sensation:

(*b*) slight hemiplegia of a transient nature, without contractures:

(*c*) slight hemi-ataxia, and more or less complete astereognosis:

(*d*) persistent paroxysmal pains on the affected side, often intolerable and unrelieved by any antalgesic remedy:

(*e*) choreo-athetotic movements on the affected side.

In Roussy's opinion the motor symptoms (*b* and *e*) are attributable to an accessory capsular lesion.

From the anatomical point of view, the material examined shows the existence of cortico-petal fibres passing from the thalamus to all parts of the cortex; also crossed thalamo-cortical fibres and thalamo-thalamic fibres; fibres to the corpus striatum; descending thalamo-rubric fibres, some perhaps passing into the superior cerebellar peduncle.

The author finds no evidence in man or animals of fibres passing directly from the optic-thalamus to the spinal cord.

S. A. K. WILSON.

THE SEXUAL LIFE OF OUR TIME. IWAN BLOCH. English translation by M. Eden Paul. London: Rebman Ltd., 1908. Pp. 790. 21s. net.

THIS work is probably of more value to the psychologist and sociologist than to the practising physician as such. Indeed, as the author tells us in his preface, it is written "for all earnest men and women," and it should appeal most strongly to members of the learned professions, instructors of youth and social reformers. The subject is not one that we can afford to ignore; such rampant evils as prostitution and venereal diseases will continue to flourish in the darkness of ignorance; it is only through the light of accurate and widely diffused knowledge that we can hope to conquer them. To all who are seeking light and to all whose duty it is to shed light on these matters we can thoroughly recommend Dr Bloch's work. All aspects of the subject are considered, and it is a perfect mine of references to a most varied literature. His outlook on the future is clear and hopeful, his parting word is to "fight courageously with all the hostile forces described in this book . . . . and let us imprint on our sexual conscience three words—*health, purity, responsibility*." Dr Paul is to be commended for his translation.

J. H. HARVEY PIRIE.

MENTAL DEFICIENCY (AMENTIA). By A. F. TREDGOLD, L.R.C.P.Lond., M.R.C.S.Eng., Consulting Physician to the National Association for the Feeble-minded, and to the Littleton Home for Defective Children; Medical Expert to the Royal Commission for the Feeble-minded, etc. Pp. 391. 76 Illustrations. London: Baillière, Tindall & Cox. 1908. Price 10s. 6d. net.

THIS book is inscribed to "All those persons of sound mind who are interested in the welfare of their less fortunate fellow-creatures," and it is so free from technical terms that it may be read with pleasure by any educated person interested in the subject. Its primary object, however, appears to be to give to the general practitioner of medicine an accurate account of the present state of knowledge as to the feeble-minded, and as to the problems they present, not only to the physician and the psychologist, but also to the sociologist and the statesman. It is based upon an enormous mass of material collected by the author from very different sources in the last ten years. This is so skilfully handled and so well classified that the book is always clear and interesting. The results of the investigations of the Royal Commission are pretty fully given, and the work of others in the same field is frequently acknowledged.

The definition of amentia as "a state of mental defect from birth, or from an early age, due to incomplete cerebral development, in consequence of which the person affected is unable to perform his duties as a member of society in the position of life to which he was born," is new, and in many ways better than any of its predecessors. The division of all aments into feeble-minded, imbeciles, and idiots, as suggested by the Royal Commission, is adopted, and it is shown how much this helps to clear thinking and right conclusions in all such matters as their social relationships, diagnosis, prognosis, and treatment. An earnest attempt is made to define the feeble-minded from the normal on the one hand and the imbecile on the other, and the chapter on this subject should be read by all who have to certify mentally defective children for special schools or other purposes. The author admits "that the diagnosis is often extremely difficult, and may be impossible until the touchstone—special training—has been applied"; but he does not seem to realise that this difficulty may account, to some extent, for the extraordinary variations in the incidence of amentia, which were discovered by the Commission in different parts of the country. He proves the existence of a considerable number of cases that would be considered normal y one observer and feeble-minded by another.

Dr Tredgold has been at great pains to investigate the causes of amentia. His painstaking researches into family histories have led him to believe that in 90 per cent. of all cases amentia is "the final manifestation of a progressive psychopathic diathesis." Alcohol and tubercle and possibly other causes in the parents produce neurasthenia, hysteria, migraine, and the milder forms of epilepsy in the offspring. If these marry persons similarly afflicted, insanity, the graver forms of epilepsy, and early dementia, make their appearance, and should the process be further continued "there will be a strong probability of one or more children suffering from amentia." Weissman is thrown overboard, Mendel is not mentioned, and the possibility, suggested by Sir Arthur Mitchell, that some of the feeble-minded are like the *shotts* that always occur in flocks of lambs, "however high in quality may be the rams and ewes which begot them," is not considered. It cannot be said that Tredgold has proved his case, but the careful, thorough work on which he has based it will have to be taken account of by any future workers on the subject. The environmental or extrinsic causes that produce secondary amentia are classified afresh, but in the presence of a family history of nervous disease, alcoholism, or tubercle, they are regarded as merely exciting factors. It is interesting to note that the author does not believe that slum life and its associated conditions can produce amentia.

The classification adopted is based on that of Ireland, modified in accordance with these views of the etiology. The new class of simple primary amentia corresponds, in the main, with Ireland's genetous group. Tredgold, however, admits to it cases of epilepsy, paralysis, hydrocephalus, porencephalus, and deaf-mutism, on the ground that these are mere complications of the primary condition. This seems a retrograde step, and one that is certain to lead to confusion till we know something more of the meaning of "blighted germinal plasm." Microcephaly and Mongolian imbecility are regarded as varieties of simple primary amentia, and the disadvantages of being too closely tied to a theory are plainly apparent in the discussion of them. Mongolians are said to result from two factors, "morbid heredity and uterine exhaustion, and with a pronounced degree of the latter the hereditary defects may be only slight." It would have been more scientific to have followed Ireland and put them in the group of which the causation is unknown, for there are many cases in which it is impossible to be sure either of morbid heredity or any uterine trouble, and the class is so distinct from any other that it is difficult to believe that such close resemblances could result from such general causes.

Whether the classification is the best possible or not, it serves the purpose of enabling the author to arrange a great mass of facts as to all classes of aments. Illustrative cases are freely given, are well chosen, and described in an interesting manner. There is a good chapter on *idiots savants*, which includes a full account of the genius of Earlswood Asylum.

The last third of the book is perhaps the best. It contains an admirable essay on the relation of the ament to society, and an account of morally defective, criminal and insane aments, which will be of the greatest possible use in many delicate medico-legal cases. Then there is a chapter on diagnosis and prognosis written for the general practitioner, and fulfilling all his needs. It is still unfortunately "necessary to enter a protest against the practice adopted by some medical men, of telling the parents that the child will 'grow out of it,' or that he will be 'all right when he is seven,' or 'fourteen,' or 'twenty-one.'" Finally, there is a short account of treatment and training, which makes no attempt to teach actual pedagogic methods, but which lays down the general principles which must guide the physician in charge of such cases. All this is quite admirably done.

The book is decidedly one to be read, and at the present time, when so many are entering on the medical examination of school-children, and when the interest of School and Poor Law Authorities is roused in the class with which it deals, it should have a wide field of usefulness. It is well illustrated, and there is a useful appendix containing a summary of the English law concerning amentia, and of the recommendations of the Royal Commission in regard to it. R. D. CLARKSON.

Obituary

CHARLES EDWARD BEEVOR, M.D., F.R.C.P.Lond.

President of the Neurological Section of the Royal Society of Medicine, Physician to the National Hospital for the Paralysed and Epileptic, Physician to the Great Northern Central Hospital.

BY the death, on Saturday, December 5th, of Charles Edward Beevor, Neurology has lost, in the prime of life, one of its most earnest and devoted students. His totally unexpected decease was preceded by only a few minutes' illness consequent upon unsuspected atheroma of the coronary arteries.

Dr Beevor's association with Neurology dated from the time he took up the duties of Resident Medical Officer at the National Hospital for the Paralysed and Epileptic in Queen Square more than twenty-five years ago, and lasted, with ever-increasing intimacy, until he passed away at the early age of fifty-four, holding the position of Physician to that Institution, and that of President of the Neurological Section of the Royal Society of Medicine.

His contributions to the study of diseases of the nervous system were numerous and important, and if his early research work in collaboration with Sir Victor Horsley laid the foundation of his fame, some of his later papers were perhaps more characteristic of the man. He was remarkable, not so much for any extraordinary quickness of intellectual grasp, nor for an unusually retentive memory, but for an industry, a perseverance, and an honesty of purpose which made his published conclusions as valuable as, and often more reliable than, those of more gifted investigators. It was these qualities, combined with an abundant fund of energy and an untiring spirit of inquiry, which enabled him to tackle difficult problems, requiring laborious patience and care for their elucidation, with so unusual a degree of success. It may confidently be asserted that his Croonian Lectures on "Muscular Movements and their Representation in the Central Nervous System," and his more recent publication, "On the Distribution of the Different Arteries of the Brain," not only form his most fitting monument, but will live for many a long year, and all the world over, as the standard works of reference on the subjects with which they deal.

By his many friends and colleagues Dr Beevor's loss will be most keenly felt, for he possessed personal qualities which never failed to engage and to hold the affection of all with whom he came in contact. A shrewd judge of character, he was never heard to utter an uncharitable word; a strong believer in experimental research, he never wittingly caused man or beast a moment's unnecessary suffering. Upright and generous, scrupulously fair and unfailingly courteous, his character was perhaps most distinguished by a rare combination of childlike simplicity, almost feminine gentleness, and manly modesty, which left him, at the end of an unblemished career, not only without an enemy, but enjoying the affectionate esteem of his most casual acquaintance, as well as the enduring devotion of his intimates.

Old fellow-students on the Continent, newly-made friends across the Atlantic, will unite with his English professional comrades in expressing their sense of deep sympathy with the widow and children who survive and mourn.

BOOKS AND PAMPHLETS RECEIVED.

"Handbook for Attendants on the Insane." Fifth Edition. Bailliere, Tindall & Co., London, 1908, 2s. 6d.

Ludwig Edinger. "Der Anteil der Funktion an der Entstehung von Nervenkrankheiten." Bergmann, Wiesbaden, 1908.

Karl Kleist. "Untersuchungen zur Kenntnis der psychomotorischen Bewegungsstörungen bei Geisteskranken." Werner Klinkhardt, Leipzig, 1908.

W. H. B. Stoddart. "Mind and its Disorders. A Text-Book for Students and Practitioners." (Lewis's Practical Series.) London, H. K. Lewis, 1908, 12s. 6d.

"Klinik für psychische und nervöse Krankheiten." Herausgegeben von Robert Sommer. Bd. 3, H. 2 u. 3, 1908. Marhold, Halle, 1908.

Steyerthal. "Was ist Hysterie?" Marhold, Halle, 1908, M. 1.80.

Kolb. "Vorschläge für die Ausgestaltung der Irrenfürsorge und für die Organisation der Irrenanstalten." Marhold, Halle, 1908, M. 1.20.

Birnbaum. "Psychosen mit Wahnbildung und wahnhafte Einbildungen bei Degenerativen." Marhold, Halle, 1908, M. 6.

Charles K. Mills. "The Cerebral Centres for Taste and Smell and the Uncinate Group of Fits" (*Journ. Amer. Med. Assoc.*, Sept.).

Charles K. Mills. "Psychotherapy: its Scope and Limitations" (*Monthly Cyclopædia and Med. Bull.*, July 1908).

C. Judson Herrick. "Review of 'Edinger's Lectures on the Central Nervous System'" (*Anat. Rec.*, Oct. 1908).

C. Judson Herrick. "Morphological Subdivision of the Brain" (*Journ. Comp. Neurol. and Psychol.*, No. 4, 1908).

C. Judson Herrick. "Phylogenetic Differentiation of the Organs of Smell and Taste" (*Journ. Comp. Neurol. and Psychol.*, No. 2, 1908).

C. Judson Herrick. "On the Commissura Infima and its Nuclei in the Brains of Fishes." (*Journ. Comp. Neurol. and Psychol.*, No. 4, 1908).

A. Pick. "Über das Sprachverständnis." Drei Vorträge. J. A. Barth, Leipzig, 1909, M. 2.

N. Gierlich and M. Friedmann. "Studies in Paranoia." Translated by Smith Ely Jelliffe. Nervous and Mental Disease Monograph Series, No. 2, 64 W. 56th Street, New York, 1908, $ 1.

Review
of
Neurology and Psychiatry

Original Articles

GONOCOCCAL MENINGITIS

By GEORGE HENDERSON and W. T. RITCHIE.

(With Plate 2.)

ONE of the rarest forms of cerebro-spinal meningitis is that which is caused by infection with *Micrococcus gonorrhœœ.* Many of the most authoritative and classical treatises on medicine and on diseases of the nervous system do not make even a passing reference to gonococcal meningitis, nor is the condition mentioned in the works of Councilman, Mallory, and Wright (1898), of Jäger (1901), or of França (1903). But the possibility of the onset of acute leptomeningitis and of myelo-meningitis in the course of a systemic gonorrhœal infection has been long recognised, and there are many records of cases which have been thought to illustrate the causal association of gonorrhœa and meningitis.

The literature of the subject may be said to date from the commencement of the last century, when Everard Home (1805) recorded his observations on certain nervous manifestations occurring in the course of gonorrhœa. Stanley's classical paper, "On Irritation of the Spinal Cord and its Nerves in Connection with Disease in the Kidneys," was published in 1833. Although many of Stanley's observations have little bearing upon the subject of gonorrhœal meningitis, two of his cases, namely those recorded on page 264 and on page 266, were examples of paraplegia in patients affected with gonorrhœa. In the former of these two cases "there was no morbid appearance discoverable in any part of the brain or spinal cord," while in the second case "there was found some turgescence of the vessels both in the membranes and substance of the lumbar portion (of the cord), and a few drachms of transparent fluid in the theca. . . . Some fluid was found between the membranes of the brain and in its ventricles." Stanley believed that the paralytic phenomena in such cases were of reflex origin, but this theory was disproved by the observations of Gull (1856, 1861) and of von Leyden (1865).

In 1888 Hayem and Parmentier recorded two cases of well-marked meningitis associated with gonorrhœa. Both patients recovered. Hayem and Parmentier also refer to somewhat similar cases observed by Peter (1866), Tixier (1866), Pidoux (1866), and Ricord (1866). Raymond (1891) reviewed the whole subject in a paper entitled "Les complications nerveuses de la blenorrhagie," and he refers to Bonnet's thesis (1877) on the cerebral manifestations of gonorrhœal rheumatism. Spillmann and Haushalter (1891) reported two interesting cases, both being young women affected with gonorrhœa, arthritis, and paraplegia. Engel-Reimers (1892) differentiated gonorrhœal meningitis from gonorrhœal polyneuritis, and in the same year von Leyden recorded a case of meningo-myelitis following gonorrhœa. The case recorded by Fürbringer (1896) was supposed to be one of acute gonorrhœa, complicated by cerebro-spinal meningitis, due to Jäger's diplococcus, but the accuracy of the bacteriological diagnosis is open to doubt. In Wooten's case (1899) no mention is made of any bacteriological examination, and in Eulenburg's case (1900) it appears that only the threads in the urine were examined bacteriologically. So far as we can ascertain no bacteriological examination was made in d'Amato's case (1900), while in that reported by von Rad (1900) no gonococci were found in the fluid obtained by lumbar puncture. The cerebro-spinal fluid in Hoening's case (1901) contained intracellular diplococci, but no proof is afforded that they were really gonococci. Both Delamare (1901) and Kienböck (1901) gave an exhaustive review of the gonorrhœal affections of the nervous system. The case of meningo-myelitis recorded by Herzog (1902) was of doubtful etiology, and the same may be said of that reported by Sanz (1903).

Although the meningitis in some of the above cases was probably of gonococcal nature, conclusive evidence thereof was afforded in no instance. When Weichselbaum wrote on the subject in 1903 he was therefore fully justified in asserting that in no recorded case had the etiological relationship of the gonococcus to meningitis been definitely established.

Since that time the subject has been dealt with by several writers. Neither in Bloch's case (1905) nor in that recorded by Biek (1907) does the bacteriological diagnosis appear to have been thoroughly established. The really important observations are those of Wynn (1905), Prochaska (1905), and Rombach (1907). Wynn's communication was based upon three cases of gonococcal systemic infection, two of which are of interest from the present standpoint. In his second case "the meninges of the brain were cloudy and the subarachnoid fluid was turbid and in excess; these appearances resembled an early meningitis. . . . No gonococci were found in films from the heart valves, the lungs, the spleen, the kidneys, or the meninges, but only bacilli and staphylococci. Cultures were made on blood agar, plain agar, and in broth. . . . A feeble growth of the gonococcus was obtained on the blood agar from the pus in the vesiculæ seminales and the pelvic abscesses, but not from that in other situations. In both cases the growth was mixed with colonies of bacillus coli and staphylococci." In Wynn's third case "the subarachnoid fluid was in excess and turbid, but there was no pus in the meninges or brain substance." The heart blood after death yielded typical colonies of gonococci in pure culture, but the writer does not say whether any bacteriological examination of the cerebro-spinal fluid was made in this case.

In the fifth case recorded by Prochaska (1905) the pus in the left seminal vesicle and that from the meninges contained intracellular Gram-negative diplococci, while cocci, said to be gonococci, were obtained in pure culture both from the blood during life and from the meningeal pus after death. Prochaska, however, does not state whether any fermentation tests or experimental inoculations were employed for the purpose of diagnosis, and as the description which he gives of the cultural characters of the coccus is incomplete, the possibility of the latter being a meningococcus cannot be definitely excluded. In a somewhat similar case studied by Belke (1904), meningococci were found in the cerebro-spinal fluid, in the pus from the joints, and in that from both seminal vesicles. In another case recorded fully by Pick (1907) the diplococci isolated from the meninges, and likewise those obtained from the pus in the seminal vesicles, were subjected to a most careful investigation, and were proved to be meningococci. In Pick's case the suppuration in the seminal vesicles was secondary to a meningococcal meningitis, and we cannot be certain that a similar explanation may not be the correct one in Prochaska's case also.

Rombach's patient (1907), a male aged nineteen years, suffered from acute cerebro-spinal meningitis. The bacteriological examination of the cerebro-spinal fluid was conducted by de Josselin de Jong. The fluid contained polymorphonuclear leucocytes with both intracellular and extracellular diplococci of gonococcal type, and cultivation yielded pure cultures of the gonococcus. de Jong expressly states that the microorganism was not the meningococcus. It failed to grow in plain bouillon or on plain agar medium. Although no fermentation tests or experimental inoculations were performed, the organism may be accepted as a gonococcus. In our opinion this is the only case where a definite diagnosis of gonococcal meningitis has yet been established by direct bacteriological examination of the cerebro-spinal fluid.

The case which we now record, and of which a preliminary note was published by one of us last year, was a case of acute cerebro-spinal meningitis and arthritis complicating gonorrhœa. Intracellular and extracellular Gram-negative diplococci identical in form with gonococci were observed in the cerebro-spinal fluid, and although no growth could be obtained from that fluid, the agglutination and the fixation of complement tests proved conclusively that the nature of the infection was not meningococcal but gonococcal.

The patient was a man, twenty-three years of age, who had served as a soldier, but had of late been working in a warehouse. He had been previously always strong and healthy, and had not suffered from syphilis. That he had been recently in excellent health was evident from the fact that only two days before the onset of the meningitis he had won two races at a local athletic sports meeting. The present illness began on the 30th June 1908, eight days after the onset of a gonorrhœa, and about thirteen days after the infection had been acquired. While at work he developed a headache, which became so severe that he went home. On the following day, the pain being no better, he was seen by Dr W. D. Osler, but, despite treatment, the pain became much worse, he vomited several times, and on the third day he was admitted to the male ward in the Edinburgh Royal Infirmary, under the charge of Dr G. A. Gibson, to whom we are indebted for permission to publish the case.

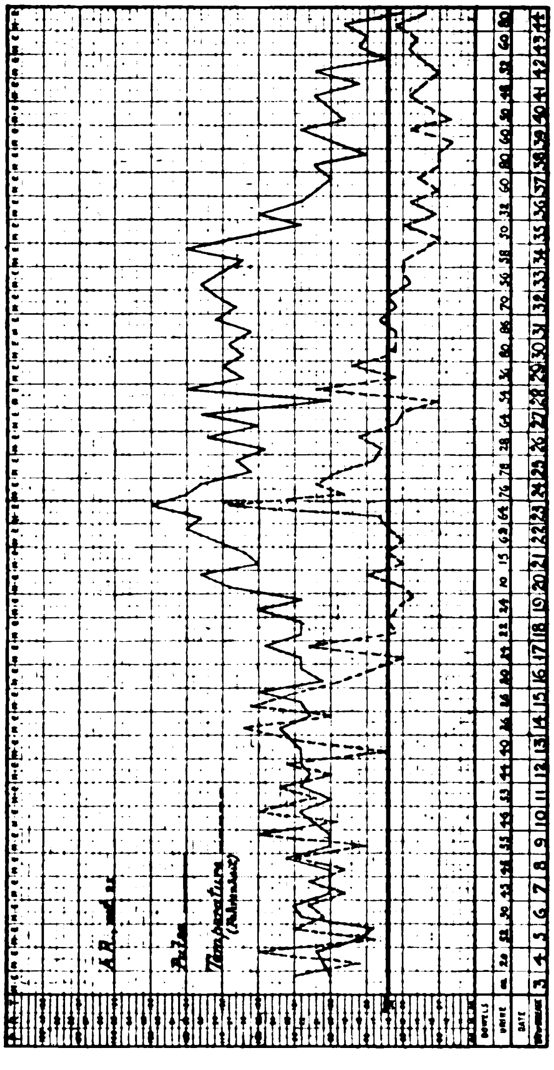
On admission the patient, who was fully conscious, complained of intense pain in the back of the head. His pulse rate was 80, and the respiratory rate 21 per minute, the temperature being 101° F. There was no herpetic or other skin eruption, and no visible or palpable enlargement of the lymphatic glands. The patient had no further vomiting after admission. The pupils were equal and regular in outline, and they reacted normally to light and on accommodation. There was no strabismus, and no nystagmus. Examination of the fundus oculi revealed slight congestion of the optic discs in both eyes. There was no loss of motor power in any of the voluntary muscles, no opisthotonos, no hypertonus in the limbs, and Kernig's sign was entirely absent. There was no head retraction, though the muscles of the neck presented some rigidity. The tendon responses of both upper and lower limbs were slightly exaggerated, equally so on the two sides of the body, but no abnormality was detected either as regards the superficial reflexes or the sphincters of the bowel and bladder. Examination of the heart, lungs, alimentary system and urine revealed no changes worthy of special notice. The blood presented a well-marked leucocytosis of 14,600 leucocytes per c.mm., 87 per cent. being of the polymorphonuclear type. During the first fortnight of the patient's illness his blood was examined frequently, a leucocytosis of from 15,000 to 18,000 per c.mm. being observed on each occasion.

The intense headache was temporarily relieved by the administration of phenacetin and by the application of an icebag to the head. Three hours after the patient's admission, lumbar puncture was performed, and 28 c.c. of extremely turbid cerebro-spinal fluid was withdrawn under greatly increased pressure. Stained films from the deposit contained an abundance of polymorphonuclear leucocytes, but no micro-organisms were detected. The lumbar puncture gave the patient relief from pain, and he passed an excellent night. On the following day the headache was again severe, and pain was experienced in the neck and back as low down as the spines of the scapulæ. There was now considerable cutaneous hyperæsthesia over the lower limbs and abdomen, and the patient objected to be moved in bed.

On the fifth day the patient complained of pain in the right knee, but examination revealed no abnormality except pain on movement. Lumbar puncture was again performed, and it again afforded complete relief from the pain in the head. It was observed that when the cerebro-spinal fluid, on this and on other occasions, was collected in several test tubes, the sample taken in the first tube was almost clear, that which was obtained in the second tube was turbid, while that which was collected in the third and fourth tubes was still more milky in appearance. In this respect the fluid differed strikingly from that which is usually obtained in cases of acute meningococcal meningitis, but we were unable to determine satisfactorily the reason of this peculiar difference.

As films prepared from the cerebro-spinal fluid taken on the fifth day contained several pairs of Gram-negative diplococci with their apposed surface flattened, and situated within the cytoplasm of polymorphonuclear leucocytes which were very abundant, the case appeared to be one of meningococcal cerebro-spinal meningitis. The pain, however, in the right knee-joint still gave trouble, and on the seventh day there was a large effusion not only into that joint, but also into the metatarso-phalangeal joint of the right great toe. Both were exquisitely painful on palpation and on movement. As one of us, working with Dr Shennan (1908), had previously investigated a case of acute arthritis accompanying epidemic cerebro-spinal meningitis, where the diplococci isolated from the joints were proved to be the meningococcus of Weichselbaum, we recognised that the arthritis in the present case might be due to the same micro-organism. But a urethral discharge being now detected, inquiry elicited the fact that the urethritis had existed for fifteen days.

PLATE 2.



To illustrate Paper by Drs Henderson and Ritchie.

The purulent urethral discharge contained numerous intracellular diplococci exactly similar to, and subsequently proved by cultivation to be, gonococci. Thus a new light was thrown upon the case, and a provisional diagnosis of gonococcal meningitis was made.

The patient was now encouraged to drink bland diluents as freely as possible, and, as a large quantity of urine of low specific gravity was passed each day, this seemed to be the most satisfactory method of urethral irrigation. As the gonococcus had reached the meninges before our patient was admitted to hospital, it seemed futile to irrigate the urethra with antiseptics. Urotropin was administered, not because of its well-known merit as a urinary antiseptic, but because its use has been recently advocated in cases of acute meningitis.

The patient's general condition remained much the same until the fifteenth day, when he became very excitable, and ultimately so noisy that he had to be removed to a ward reserved for delirious cases. On the following day his temperature, which had previously been fluctuating between 102·4° and 98·4° F., fell to the normal level, the headache disappeared, and the patient's behaviour became quite rational. This improvement was maintained for five days, but, on the twenty-third day, the headache returned, the temperature rose to 103° F., and the pulse rate quickened to 130 beats per minute. Lumbar puncture was again resorted to, and on this occasion it was followed not only by relief from pain, but by a fall of temperature to 99·6° F.

At this stage of the illness the patient suffered greatly from almost incessant hiccough. The administration of bismuth salts, hydrocyanic acid, tincture of iodine, apomorphine, and other drugs failed to arrest the hiccough. The use of the electric current and the application of pressure over the phrenic nerves in the neck were likewise unavailing. Gastric lavage, followed by a large dose of chloral hydrate and of ammonium bromide, gave only transient relief. Ultimately morphia was given hypodermically, but although the patient was thereby enabled to sleep, the hiccough persisted as vigorously as before. After lasting for a whole week the hiccough stopped, quite suddenly and apparently spontaneously, but not before it had seemed likely to cause the patient's death from sheer exhaustion after all other dangers attending the meningitis had been passed.

On the twenty-ninth day the patient was so far improved that he was taken back to the general ward, but it was not until the end of the fifth week that he was able to leave his bed.

Lumbar puncture was performed seven times during the illness, between 28 and 60 c.c. of cerebro-spinal fluid being withdrawn on each occasion. The procedure was of undoubted therapeutic value, and each time it gave speedy relief from pain. The patient benefited more from lumbar puncture than do most cases of meningococcal meningitis, although in the latter disease undoubtedly good results may also be obtained by this procedure.

No attempt was made to treat the patient by the intraspinal injection of lysol, as described by França (1903), or of collargol, as used by Fowler (1907), and at no time were any sera or vaccines used.

During the early days of convalescence the patient could not remember anything that had happened either since the beginning of his illness or during the week which preceded its onset. Gradually, however, his memory both for recent and remote events improved, until at the end of ten weeks' stay in hospital it was quite regained. On his return from the convalescent home, three weeks later, he had gained in weight, the affected joints had made a perfect recovery, there was no wasting of any of the muscles, and, in short, there was nothing in his condition to suggest that he had recently suffered from a serious illness. As his general health was fully restored, and as he retained the full use of his special senses, he was discharged without any of those distressing sequelæ which are so frequently encountered in those who have recovered from meningococcal cerebro-spinal meningitis, but which appear to be extremely rare after gonococcal meningitis.

The chief interest of the case lies in the diagnosis. The patient was suffering from acute cerebro-spinal meningitis and arthritis, following a gonococcal urethritis. The only micro-organisms in the cerebro-spinal fluid were scanty Gram-negative intracellular and extracellular diplococci, which, from their morphological characters and staining reactions, might have been either gonococci or meningococci. Thus the problem we had to solve was whether there was a systemic gonococcal infection manifested by meningitis and arthritis, or whether there was a double infection—a gonococcal urethritis, accompanied by a meningococcal meningitis and arthritis.

Numerous attempts were made to cultivate the micro-organism from the cerebro-spinal fluid. Many slopes and plates of ovarian, parovarian, and ascitic agar, and likewise tubes of ovarian and parovarian bouillon, were inoculated with turbid cerebro-spinal fluid withdrawn between the seventh and the fourteenth day of the illness. No growth was ever obtained. No further cultivations were made, because, although the cerebro-spinal fluid withdrawn on the fifteenth and subsequent days was still slightly turbid, the centrifugalised deposit now consisted almost entirely of lymphocytes, the polymorphonuclear leucocytes having largely disappeared, and no micro-organisms being seen in the films. Cultivations were also made from the blood taken from a superficial vein on the seventh day, but no growth was obtained. As it is, in general, more difficult to obtain an initial growth of the gonococcus than of the meningococcus, the failure to cultivate the micro-organism from the cerebro-spinal fluid and blood of our case suggests that it was probably the gonococcus and not the meningococcus that was present. It was unfortunate that a growth could not be obtained, because the diagnosis might have been readily established by cultural, and especially by fermentation, tests. In parovarian broth, containing 1 per cent. of glucose, galactose, maltose, or dextrin, the meningococcus produces an acid reaction. The gonococcus forms acid in glucose and galactose, but does not ferment maltose or dextrin. Saccharose, lactose, dulcite, and erythrite are not fermented by either organism. These fermentation tests have been carefully studied by one of us working in conjunction with Dr Shennan (1908). Rothe (1908) likewise finds that the gonococcus differs from the meningococcus in not fermenting maltose.

Cerebro-spinal fluid, freshly withdrawn on the tenth day, was inoculated intraperitoneally into three mice and into a young guinea-pig of 175 grammes weight. Each mouse received 1·5 c.c. of the fluid, while the guinea-pig was given 3 c.c. As all four animals were alive and well eighteen days later, it is difficult to believe that the cerebro-spinal fluid contained meningococci. We thus obtained confirmatory, though still inconclusive, evidence of the meningitis being due to the gonococcus.

Agglutination tests were carried out with blood serum obtained from the patient on the twenty-first day of the disease. In dilutions of 1 : 10 and 1 : 50, and at the room temperature, the serum completely agglutinated a suspension of gonococci in three hours, whereas there was but little agglutination of meningococci after that interval. Similar results were observed with the serum in dilutions of 1 : 30, 1 : 50, and 1 : 100 at 55° C. Control tests, with a normal serum in dilutions of 1 : 30 and 1 : 50, showed some agglutination of the gonococcal suspension, but a very feeble agglutinative effect on gonococci was exerted by the normal serum in a dilution of 1 : 100. Our knowledge of the agglutinative action of gonococcal and of meningococcal sera has been considerably enlarged of recent years by the investigations of Bruckner and Cristéanu (1906), Vannod (1907), Torrey (1907), Eberle (1908), and Dopter and Koch (1908), and we may conclude that while the agglutination tests performed with the serum of our patient point to a gonococcal infection, they give no indication that he was suffering from a meningococcal infection.

The final proof was furnished by fixation of complement tests, which were employed at the suggestion of Dr James Ritchie. The method has been used by Müller and Oppenheim (1906) and by Bruck (1906) for the diagnosis of systemic gonococcal infections. Vannod (1907) has demonstrated a gonococcal immune body in the blood serum of animals inoculated with gonococci, while M'Kenzie and Martin (1908) and others have similarly shown the presence of a meningococcal immune body in the serum of patients suffering from epidemic cerebro-spinal meningitis.

In the following tables, which record our fixation of complement tests, G indicates 1 c.c. of a suspension of gonococci in 0·85 per cent. sodium chloride solution; M indicates 1 c.c. of a similar suspension of meningococci; C signifies the complement employed, namely, guinea pig's serum six hours old. The patient's serum, S, was obtained on the twenty-first day of the illness, and before being employed it was inactivated at 57° C. R signifies 1 c.c. of a suspension of washed ox red blood corpuscles in 0·85 per cent. sodium chloride solution; HIB stands for a hæmolytic immune body for ox corpuscles, kindly given to us by Dr W. M. Scott. Unless otherwise indicated, the amount of HIB employed in any test was 0·08 c.c. Seven preliminary tests were made to determine the efficacy of the complement and of the hæmolytic immune body, and also to ascertain that the sample of the patient's serum had really been inactivated. The elements were mixed together in test tubes and then placed at 37° C. The tests are represented in the following table:—

1. R+HIB+C (0·1 c.c.)=Complete lysis in 30 minutes.
2. R+HIB+C (0·16 c.c.)= „ „ „ 15 „
3. R+HIB =No „ „ 60 „
4. R +C (0·16 c.c.)= „ „ „ 60 „
5. R+S (0·12 c.c.) = „ „ „ 15 „ +HIB (0·4 c.c.)=No lysis in 60 minutes.
6. R+S (0·12 c.c.)+C (0·2 c.c.)=No „ „ 15 „ +HIB (0·4 c.c.)= Complete lysis in 30 minutes.
7. R +C (0·2 c.c.)=No „ „ 15 mins. +HIB (0·4 c.c.)= Complete lysis in 30 minutes.

The potency of the hæmolytic immune body and of the complement having been thus ascertained, and the sample of the patient's serum having been proved to be inactivated, we proceeded to test the fixation of complement, C, to gonococci, G, and to meningococci, M, in the presence of the inactivated serum, S:—

		37° C.		After 45 minutes at 37° C.
8.	G+S (0·08 c.c.)+C (0·1 c.c.)	1 hour	+R+HIB	= No lysis.
9.	G +C (0·1 c.c.)	„	+R+HIB	= Slight „
10.	G+S (0·12 c.c.)+C (0·16 c.c.)	„	+R+HIB	= No „
11.	G +C (0·16 c.c.)	„	+R+HIB	= Slight „
12.	G+S (0·16 c.c.)+C (0·2 c.c.)	„	+R+HIB	= Slight „
13.	G +C (0·2 c.c.)	„	+R+HIB	= Marked „
14.	G+S (0·16 c.c.)+C (0·16 c.c.)	„	+R+HIB	= No „
15.	M+S (0·08 c.c.)+C (0·1 c.c.)	„	+R+HIB	= Complete „
16.	M +C (0·1 c.c.)	„	+R+HIB	= Complete „
17.	M+S (0·12 c.c.)+C (0·16 c.c.)	„	+R+HIB	= Complete „
18.	M +C (0·16 c.c.)	„	+R+HIB	= Complete „
19.	M+S (0·16 c.c.)+C (0·2 c.c.)	„	+R+HIB	= Complete „
20.	M +C (0·2 c.c.)	„	+R+HIB	= Complete „

If we compare test No. 8 with No. 15, and No. 10 with No. 17, we observe that in No. 8 and No. 10 there is well-marked fixation of complement to the gonococcus, whereas in No. 15

and No. 17 there is no evidence of fixation to complement to the meningococcus. Tests Nos. 9, 11, 13, 16, 18, and 20 are control tests in which the patient's serum was not used. The fixation of complement tests thus demonstrated that the patient's serum contained a thermostable gonococcal immune body, but not a meningococcal one, and we thereby obtained conclusive evidence that the meningitis and arthritis were the manifestations, not of a meningococcal, but of a gonococcal infection.

The chief points in the case, indicating the evidence upon which the diagnosis of gonococcal meningitis is based, may be summarised as follows:—

1. A man, aged twenty-three, developed acute cerebro-spinal meningitis—and subsequently a polyarthritis—eight days after acquiring a gonorrhœa. He made a complete recovery without any specific anti-meningococcal treatment being employed.
2. Gonococci, but no meningococci, were obtained from the urethral discharge.
3. The only micro-organisms detected in the cerebro-spinal fluid were scanty intracellular Gram-negative diplococci, with their apposed surfaces flattened.
4. All efforts to obtain cultures from the cerebro-spinal fluid and from the blood were unsuccessful.
5. A young guinea-pig and three mice remained well after having been inoculated intraperitoneally with the cerebro-spinal fluid.
6. The patient's blood serum agglutinated gonococci readily, but it had only a slight agglutinative action upon meningococci.
7. The patient's blood serum contained a thermostable gonococcal immune body, but not a meningococcal one.

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ON THE ORIGIN OF THE FACIAL NERVE.

By N. BISHOP HARMAN, M.A., M.B., Cantab, F.R.C.S.Eng.,

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THE paper with this same title by Dr Alexander Bruce, the editor of the *Review*, and Dr Harvey Pirie, under date December 1908 (1), gives an excellent and scholarly review of the several and conflicting views that have been and are still held as to the primary origin of that big bunch of nerve fibres known as the seventh cranial or facial; and, in particular, there is published the results of a detailed investigation into a case of complete one-sided facial paralysis, caused by degeneration of the corresponding facial nucleus, and of that nucleus alone. They add another to the growing list of cases which show that the hypothesis of Mendel as to the innervation of the facial muscles from motor oculi, facial, and hypoglossal nuclei is not only unsupported by sufficient clinical evidence, but is directly contradicted by the most recent and most careful investigations. In 1907 I published a paper (2) with the same title as that heading this note, giving a summary of a series of anatomical investigations into the morphology of the facial musculature and of the facial nerve. And I would venture to enter into this discussion again, for most will agree, I think, that whenever there is doubt as to the interpretation of clinical material, anatomy will bring true and uncorrupted light, for disease has not come into the case.

THE ORIGIN OF THE FACIAL MUSCULATURE.

My anatomical work (3) was done in 1899 on sharks, and I applied it in papers read before the Ophthalmological Society in 1903 (4) and 1904 (5).

Briefly these researches may be summed up as follows:—In the early vertebrates there is no facial musculature. With the development of eyelids and nictitating membrane, first observed in the sharks, the nearest available musculature is adapted for the service of these new eye appendages; this musculature is the muscles of the spiracle (the spiracle is the first gill-cleft behind the eye, and has its representative in man in the ear-tube). In those sharks which have a small development of eyelids the filching of the spiracle muscles is of the smallest; in those sharks where the eyelids and nictitating membrane are highly developed, nearly the whole of the spiracle muscles have gone over to the service of these appendages, and the spiracle has become atrophied, and only remnants of the muscles proper to the lost gill can be traced. In these sharks I traced the development of the spiracle musculature in a series of embryos; it was that common to every gill, and in more developed embryos the growth of the new eyelid musculature from the spiracle musculature was followed. In all these fish the nerve supply could be traced from the conjoined nucleus of seventh and fifth, a nucleus known to anatomists as the "facial complex."

The progressive growth of the stolen spiracle muscles in the service of the face can be traced to their full development in the facial muscles of man. From earliest to latest conditions they are arranged in two layers, superficial and deep; and there is always a most marked intercommunication of the many "muscles" of the face, in fact the facial musculature is not made up of so many distinct muscles, but of two sheets of muscle which have many slips, and to these slips we give, for convenience of distinction, names—for example, orbicularis palpebrarum, levator anguli oris, orbicularis oris, etc. The incorrectness of this separative nomenclature cannot be better shown than by citing the orbicularis oris, which has been demonstrated by no less a distinguished anatomist than Professor Alexander Macalister (6) to be nothing but the interlaced endings of the levator labii superioris, depressor labii inferioris, levator anguli oris and buccinator muscles, and not a separate entity at all.

ANATOMICAL CONSTANTS.

Mendel's hypothesis requires the overthrow of these anatomical facts as to the ancestry and lineage of the facial muscles and nerves in three points: (1) the splitting of muscle sheets which are a morphological unity into arbitrary areas; (2) the shifting of a primitive nerve supply; (3) the shifting of nerve cells from a cranial nucleus of one order to nuclei of quite a different order.

On these three points ;

1. That the first is not true can be further demonstrated by the curious phenomenon to which I have called attention as "nose-blinking" (7). In 20 per cent. of human subjects the slightest blinking of the eyelids produces simultaneous contraction of the levator labii superioris alaeque nasi, an action demonstrated by Flourens as early as 1842 to be under the sole influence of the facial nucleus. The phenomenon shows that Mendel's hypothetical "oculo-facial" and "naso-facial" muscle groups are still a unity.

2. If there is one thing that is constant in anatomical relations it is the nerve supply of a muscle ; be that muscle never so displaced from its original position, or be it even separated into parts so that one part remains dorsal and the other migrates to a ventral position, the primitive nerve supply is found to remain. The constancy is so marked that anatomists confidently reverse the process of search and discover the primitive origin of an obscure or anomalous slip of muscle by tracing its nerve supply. Mendel's hypothesis requires the overthrow of this stability of nerve supply.

3. The work of Gaskell (8) has shown that cranial nuclei are of various orders ; they are of three orders homologous with the nuclei easily demonstrated in a spinal segment. There are : (1) Ventral median nuclei of large cells giving rise to somatic efferent nerves ; (2) lateral nuclei of smaller cells giving rise to visceral efferent nerves ; (3) dorsal connections of afferent nerves. As I have shown embryologically, the facial musculature is derived directly from the spiracle musculature ; it is a "visceral" muscle, it had in its earliest inception a "visceral" innervation arising from the facial complex nucleus, a "visceral" nucleus which belongs to the second order of nuclei of Gaskell's classification. Mendell would shift the original innervation from its original visceral nucleus to the third and twelfth nuclei, which are of the large-celled ventral somatic order, and quite different in medullary position and anatomical character. Such requirements as these three are so revolutionary that they would require the most definite proofs before they could be accepted, and these proofs have never been found; as Gowers (9) writes: "For evidence of these hypotheses (of Mendel) we have still to wait."

It may be asked: Why has Mendel's hypothesis held the field so long? The reasons are not far to seek: (1) The primitive origin of the facial musculature was unknown; (2) the hypothesis formed a most plausible explanation for many otherwise obscure cases of paresis. It did not, however, explain all difficult phenomena—for example, the curious congenital anomaly of "jaw-winking" or synergic movement of mouth and eyelids first observed by Gunn (10) in 1883.

"JAW-WINKING" MOVEMENTS.

In a certain number of cases of congenital partial ptosis of the upper lid during mastication the drooping lid jerks up and down synchronously with the movements of the jaw. The external pterygoid is the muscle whose contraction is particularly associated with the elevation of the drooping lid. The phenomenon tends to disappear on adolescence.

A committee of the Ophthalmological Society considered the first of these cases of Mr Gunn, and thought the phenomenon was due to an aberrant innervation of the levator palpebræ superioris from the motor branch of the fifth cranial nerve. Such a conclusion is impossible with a knowledge of the origin of the muscles and of the nerves involved; and with that knowledge comes a clear explanation of the phenomenon. Nerves V. and VII. (motor) are in early vertebrates conjoined as the facial complex, the muscles of the spiracle and the jaw supplied by these nerves work together in respiration, the association can be seen any day by watching the movements of jaw and gill operculum of the goldfish in a glass globe! In normal man this associated movement is lost; but in abnormal man, where the lid elevator is weak, it is sometimes seen, for then an old-timed and long-forgotten associated relaxation of the orbicularis palpebrarum with the pterygoid action is revived and the weak levator does its work.

In my first paper read to. the Ophthalmological Society I called attention to the work of Edinger (11), in which he had described the facial nucleus in a manner different to that usually held. As students we were taught to regard most of these cranial nuclei as so many plums in the medullary pie, which, were they big enough, we could extract with our thumbs as easily as did little Jack Horner pull out a plum from another pie! Some are truly isolated clumps of cells—for example, the fourth and sixth, and these are simple because they supply, in man, a single slip of muscle. The greater number of them, however, are chains of nuclei, as we recognise easily enough in the case of the ninth and tenth nuclei; and Edinger similarly describes the seventh nucleus as forming a chain of nuclei extending some distance in the medulla, and not forming, as too many erroneously believe, a single clump. It is the longitudinal position of the nucleus which is the clue to these coincident paralyses of eye muscles innervated from the third nucleus and the orbicularis palpebrarum from the seventh, or of the muscles supplied by the twelfth and of the so-called orbicularis oris of the seventh. A lesion in the region of the third nucleus may involve the neighbouring dorsal part of the seventh, or one in the region of the twelfth nucleus may affect the not far distant ventral and inferior portion of the seventh nucleus.

CONCLUSION.

The clinical observations leave the matter in a balance of probabilities: one set of clinical cases can be set over against another set. For most it is not possible to verify clinical observations of this kind at first hand, for the cases are rare. But in the anatomical researches I have given there is an absolute basis of fact—that is, there is a series of observations which it is possible for any one to examine for himself at any time, and so far as our clinical work is concerned the demonstration of anatomical facts is the only basis of rational medicine.

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Abstracts

ANATOMY

THE ANATOMY OF THE POSTERIOR COLUMNS (DECUSSATING (62) FIBRES). (Zur Anatomie der Hinterstränge (Kreuzendefasern.))

C. J. VAN VALKENBURG, *Neurolog. Centralbl.*, Jan. 2, 1909, S. 2.

WHEN the spinal cord in animals is hemisected a secondary degeneration is almost always demonstrable in the opposite posterior column. Van Valkenburg has studied anatomically a number of human cords with the object of ascertaining whether any commissural fibres connecting the posterior columns with each other exist. His observations confirm those of Redlich, Ziehen, and Marburg as to the presence of fibres of small calibre which run a sagittal course in the posterior median septum, and pass by way of the posterior commissure into the posterior horn of the contralateral side, where they may be often followed almost into the substantia gelatinosa. Possibly some of them may terminate in the posterior horn of the same side.

The existence of these fibres is well known, though seldom referred to, and the main object of this paper is to demonstrate another series which has hereto, according to the author, escaped recognition.

When the normal cord is cut in frontal, and especially frontosagittal sections, fibres may be observed crossing the posteromedian septum from one side to the other. The author's observations lead him to believe that this is so in the case of each individual segment of the cord. In many sections a fibre or bundle of fibres may be seen within the septum, passing towards and eventually becoming part of the posterior column of one or other side. When serial sections are made at any level of the cord, almost without exception fibres are met with which pass across the whole breadth of the septum, and connect the two posterior columns with one another. Sometimes these fibres pursue a course of considerable length; in other cases the crossing is almost transverse. At no special level do they preponderate. These fibres are of the same size as those which enter by the posterior roots. In cases examined in which the posterior roots were completely degenerated no trace of these fibres was to be found, hence it seems that they are direct processes of the posterior roots to the opposite posterior column. These fibres are not, it is true, very numerous, still their presence has to be reckoned with, and may afford data of no small importance in connection with the controversy regarding the conduction of sensory impulses. EDWIN BRAMWELL.

ON THE FIRST STAGES OF THE DEVELOPMENT OF THE (63) PYRAMIDAL TRACTS IN MAN. (Sui primi studi di sviluppo del fascio piramidale nell' uomo.) PUSATERI, *Riv. Ital. di Neuropat., Psych. ed Elettrot.*, Vol. i., Fasc. 11.

THE author, making use of the silver method of Cajal, has found that in a fœtus 75 mm. long the pyramidal tracts can be traced as far as the pons, but there is no sign yet of the decussation or of the pyramidal fibres in the spinal cord. The crossing of the sensory fibres is quite evident. In the spinal cord the antero-lateral tracts contain some fine fibres which probably belong to the ground bundles. The anterior and posterior roots are differentiated, and the cells of the spinal ganglia and of the anterior cornua possess an evident fibrillary structure.

In a fœtus of 120 mm. some fibres of the pyramidal tract can be followed to the decussation, but the direct and crossed pyramidal columns are not yet visible. Clarke's column has also appeared. R. G. ROWS.

A CONTRIBUTION TO THE STUDY OF THE ENDOCELLULAR (64) NEUROFIBRILLARY RETICULUM IN NORMAL AND PATHOLOGICAL CONDITIONS. (Contributo allo studio del reticolo neurofibrillare endocellulare in condizioni normali e patologiche.) ALESSANDRO AMATO, *Riv. Ital. di Neuropat., Psych. ed Elettrot.*, Vol. i., Fasc. 9.

THE researches of Cajal and Rebizzi have shown that the endocellular neurofibrillary reticulum in the nerve cells of the medicinal leech is extremely simple. The author therefore made use of the leech in the experiments which formed the basis of this paper. He recognises only two types of reticulum, one in which the reticulum is limited to the neighbourhood of the nucleus, and a second in which it lies at the periphery of the cell. He mentions, however, a subdivision of the second type which shows some fibrils passing across the cell from one side of the reticulum to the other. Observations were made of the changes in the reticulum after the action of over-feeding, prolonged inanition, chloroform, hyperpyrexia, and electric currents.

In all the experiments there was a primary hypertrophy of the fibrils of the reticulum, and this was followed by a thinning and often by a breaking up of the fibrils. There was no specific change which could be said to be a characteristic of any one of the morbid stimuli employed.

The primary hypertrophy is considered as a reaction against the various stimuli, but it is impossible to say where the physiological reaction ends and the pathological change begins. At the same time both the atrophy and the breaking up of the fibrils always appeared first in the part of the cell furthest removed from the point of origin of the nerve process. R. G. Rows.

PHYSIOLOGY.

THE INFLUENCE OF THE CEREBELLUM ON SPEECH. (Ueber (65) den Einfluss des Cerebellum auf die Sprache.) BONHOEFFER, *Monatsschr. f. Psychiatr. u. Neur.*, Nov. 1908, Bd. 24, Ht. 5, S. 379.

The case of a man aged 45, who had suffered from a cerebellar tumour, is described. The tumour, an encapsulated myxo-sarcoma, was removed from the right cerebellar hemisphere, and a sixth part of the left hemisphere was also removed as a result of the injury done by searching on the wrong side. Two years after the patient was quite free from all his previous symptoms, but showed a speech disturbance that had developed a short while after the operation. The principal characteristic of this was a diminution in the rate of speech, which was especially marked at the transition from one language to another. Bonhoeffer likens this to the adiadocokinesis that Babinski describes in cerebellar lesions, and considers that the cerebellum exerts a regulating influence on the mechanism of speech, and that cases of bradyphasia, scanning, etc., attributed to pontine lesions are really cerebellar in origin.

ERNEST JONES.

THE CEREBRAL CENTRES FOR TASTE AND SMELL AND (66) THE UNCINATE GROUP OF FITS. CHARLES K. MILLS, *Journ. of the Amer. Med. Assoc.*, Sept. 12, 1908, p. 879.

Mills describes the case of a woman, aged 34, who, although she had suffered from headaches at irregular but frequent intervals since childhood, had had fair health up to the age of thirty. For a year or two prior to April 1904, when she came under observation, the headaches had become more severe. They were usually frontal or occipital.

In 1899 she began to have slight seizures lasting for about half a minute, in which she was said to have nausea, to be somewhat confused, and to articulate indistinctly or incoherently. She had a convulsion in October 1903, which was preceded by the above-mentioned phenomena. The patient, in describing her attacks, stated that she had a sensation of some kind in the region of the stomach, soon followed by a sensation of taste and smell. She could not tell the nature of the taste or smell. In some instances these sensations were accompanied by smacking of the lips and chewing movements. On examination smell was found to be retained. Over the back of the tongue she tasted correctly, but in the area of the chorda tympani, although she tasted something, she could not distinguish its quality or flavour. There was no aphasia, no motor paralysis, no sensory defect, and no hemianopia. Some difficulty in remembering words and some hesitancy in speech was noted in August 1906. On February 22, 1908, she died. During the month preceding her death she had six peculiar attacks, in which she would throw up her hands as if in great pain, and would say that the left side of her body felt numb.

At the autopsy a tumour was found on the left side of the brain, involving the uncinate, hippocampal and fourth temporal convolutions and their subcortical white matter. It did not, however, extend further into the temporal lobe.

The author refers at length to Hughlings Jackson's descriptions of the phenomena of uncinate fits. He mentions Gowers' experience as to the rarity of an olfactary and gustatory aura in idiopathic epilepsy, and holds that the interval dreamy state described by W. A. Turner and others has something pathogenetically in common with the dreamy state described by Hughlings Jackson, "although the former may be more dependent on the deteriorative cerebral condition of the patient than on the discharge of a more localised lesion." Short abstracts are given of the six cases, with autopsy, collected by Hughlings Jackson and Purves Stewart. To these the author adds notes of another case published by himself, also of an instance recorded by Linde. The case described by Buzzard (*Lancet*, July 1906) appears to have escaped his notice. EDWIN BRAMWELL.

PHONATION AFTER DIVISION OF THE BRAIN STEM. (**Phonation nach Durchtrennung des Gehirnstammes.**) H. E. KANASUGI (Tokio), *Arch. f. Laryngol.*, 1908, Bd. xxi., S. 334.

(67)

THE author's experiments on dogs, ten in number, confirm the results of Onodi's experiments.

They show that lesions of the optic thalamus and of the cerebral peduncle do not affect phonation, and that division of the brain at the level of the anterior or of the posterior corpa quadrigemina, or through the floor of the ventricle also, have no effect on that phenomena. W. G. PORTER.

THE NATURE OF THE CONDUCTION OF NERVE IMPULSE.

(68) **William Sutherland**, *Amer. Journ. of Physiol.*, Vol. xxiii., No. 2, p. 115, 1908.

A nerve impulse is of the nature of a shear in nerve substance. The author maintains, as a general physical principle, that all rigidity is of electric origin. In the case of a nerve impulse the electricity of the nerve is displaced so as also to displace the protein molecule with which the displaced electricity is associated. The amount of change at the motor nerve endings must reach a certain value before muscular response is elicited. Thus there must be produced at the point of the nerve stimulated such change that this necessary minimum will be caused at the junction of nerve and muscle. The stimulus may therefore require to dominate the whole nerve before producing its effect, and not merely to travel like an explosive sound along a speaking tube.

The time required to produce the shear is affected by viscosity. The damping which takes place in a nerve does not affect the impulse as it travels. It applies to the original establishment of the shear, not to its propagation. The protein threads of a nerve, in receiving a shear, experience powerful viscous resistance from the surrounding water or protein solution, and as regards changes in temperature, the damping changes proportionally to the viscosity of water. The higher the temperature of nerve is raised short of coagulation the quicker will the nerve impulse travel, because of the diminution in water viscosity caused by rise of temperature. W. A. Jolly.

PSYCHOLOGY.

MY LIFE AS A DISSOCIATED PERSONALITY.

(69) B. C. A. *Journ. of Abnorm. Psychol.*, Oct.-Nov. 1908, Vol. iii., p. 240.

This article is noteworthy as being an account given by an intelligent patient of her memory of the time when two alternating personalities comprised her mind. The account is so superficial that, though interesting, it brings out nothing of importance or even of novelty. There is a preliminary note by Dr Morton Prince, who treated the case. Ernest Jones.

THE FEELINGS OF ACTIVITY: A CASE OF DEPERSONALISATION AS A CONTRIBUTION TO THE PSYCHOLOGY OF THE FEELING OF ACTIVITY AND OF THE CONSCIOUSNESS OF PERSONALITY.

(70) **(Die Aktionsgefühle: Ein Depersonalisationsfall, etc.)** M. LÖWY (of Marienbad), *Prag. med. Wochenschr.*, xxxiii., Nr. 32.

THE term "depersonalisation" is used to denote the condition of patients who express certain doubts as to their own existence; they doubt of their own existence, appear to themselves strange and altered, their movements are not due to themselves, they move like automata, they cannot think, cannot feel; while as a matter of fact their activities are obviously present, their feeling of taking part in the activity is absent. The author gives the case of a woman of twenty-two, a student, who presented this symptom in the course of a psychosis in the analysis of which the author has followed the principles of Freud. The symptom of depersonalisation is discussed at great length, but the discussion has more psychological than clinical value. C. MACFIE CAMPBELL.

FATIGUE IN SCHOOL CHILDREN AS TESTED BY THE ERGOGRAPH.

(71) ROWLAND G. FREEMAN, *Amer. Journ. Med. Sc.*, Nov. 1908.

THIS paper gives a brief account of fatigue tests applied to school children in New York. Dr Freeman's desire was to obtain results which might be of use in modifying the school day, should that seem to be productive of undue strain. He used the Mosso ergograph chiefly. The instrument in his hands failed to give evidence of marked fatigue in the pupils he tested.

MARGARET DRUMMOND.

PATHOLOGY.

ANATOMICAL INVESTIGATIONS IN PROGRESSIVE MUSCULAR DYSTROPHY IN THE FIRST YEARS OF LIFE.

(72) **(Anatomischer Befund bei progressiver Muskeldystrophie in der ersten Lebensjahren.)** FINKELNBURG, *Deutsche Zeitschr. f. Nervenheilk.*, 1908, Bd. 35, S. 453.

THE patient was a male child, 21 months old at the time of death, in whom the phenomena of pseudo-hypertrophy of the calf and gluteal muscles were well marked, whilst other muscles, *e.g.* those of the upper arms and shoulder-girdle, were atrophied. The central nervous system, including the spinal cord and brain, showed no abnormality on examination by the Nissl method. The gluteal and calf muscles were reduced almost entirely to adipose tissue, interspersed with cellular connective tissue in small areas, very few striated muscle-fibres surviving. Of the atrophied muscles, the quadriceps and spinal muscles showed the appearances of muscular dystrophy without fatty infiltration: the striated muscle-fibres were split up into groups by strands of highly nucleated connective tissue. Muscle-spindles were seen here and there. The blood-vessels were normal. Finkelnburg regards the process as an arrest of development of the muscle-fibres rather than secondary atrophic process.

PURVES STEWART.

ANATOMICAL AND HISTOLOGICAL EXAMINATION OF A (73) CASE OF MICROGYRIA CONFINED TO ONE HEMISPHERE. (Examen, etc., de microgyrie hemisphérique.)

HANSHALTER and COLLIN, *Nouv. Icon. de la Salpêt.*, July-Aug. 1908, p. 263.

A CHILD of 3½ years, with a flaccid right hemiplegia of almost three years' duration: it had frequent fits on the paralysed side.

Post-mortem the relative smallness of the left cerebral hemisphere and the right cerebellar lobe was at once remarked. A degree of leptomeningitis was present all over the right cerebral cortex, so that the meninges could not be stripped off without tearing the cortex, but they were easily removed on the left side. The left hemisphere weighed 225 grams, and presented a remarkable degree of microgyria, without any noteworthy topographical modifications. The sulci were proportionately deeper than normal: one or two convolutions appeared of normal size. The right hemisphere weighed 525 grams, and, apart from the meningitis already mentioned, presented no unusual feature. The right cerebellar lobe weighed 46 grams, the left 68. Only the cerebrum was examined histologically. The lesions found were chromatolysis, vacuolation, "homogeneisation" of the nucleus, with atrophy of the pyramidal cells. The lesions are the same on the two sides, except that on the left "the pyramidal cells are singularly diminished in number."

More detailed descriptions are not given.

S. A. K. WILSON.

SARCOMATOUS MENINGITIS. NEOPLASM CELLS FOUND IN (74) THE CEREBRO-SPINAL FLUID. (Méningite sarcomateuse à prédominance bulbo-protubérantielle. Cyto-diagnostic rachidien néoplasique.) SICARD and GY, *Rev. Neur.*, Dec. 15, 1908, p. 1245.

IN a case of rapid and widespread involvement of the cranial nerves, with characteristic symptoms, lumbar puncture on four separate occasions showed a cellular deposit in which it was easy to recognise, apart from lymphocytes and a few polynuclears, many large round cells with granular protoplasm and deeply-staining nucleus, some of which showed karyokinetic figures. Post-mortem a sarcomatous tumour was found adherent to the dura over the left temporal lobe, and from this neoplastic elements had emigrated by the cerebro-spinal fluid to the subarachnoid spaces of the base, where the meninges were all infiltrated by the disease. The examination of the cerebro-spinal fluid was of considerable diagnostic value. S. A. K. WILSON.

CONTRIBUTIONS TO OUR KNOWLEDGE OF SYPHILITIC MEN-(75) INGOMYELITIS. (Beiträge zur Kenntniss der Meningomyelitis syphilitica.) LEON DROZYUSKI, *Monatsschr. f. Psychiatr. u. Neur.*, Bd. 24, Ht. 4, S. 354, Ht. 5, S. 433.

FOUR cases are described in a careful and detailed manner, and then discussed in the light of the previous literature. One of these was a case of syphilitic pseudo-tabes. No new general conclusions are reached. The author lays much greater stress on the importance of the arterial lesions than on the meningeal ones, and holds that the adventitial changes in the arteries are prior to the intimal. He considers that most cases of this nature are of primary spinal and not cerebral origin. A great number of plasma cells speaks for the gummatous as against the tubercular nature of a mass; giant cells are of less significance in this connection.

ERNEST JONES.

CONTRIBUTION TO OUR KNOWLEDGE OF SO-CALLED (76) "GLIASTIFTE. (Beitrag zur Kenntniss der sogenn. Gliastifte.) H. THIELEN, *Deutsche Zeitsch. f. Nervenheilk.*, 1908, Bd. 35, S. 391.

A CASE of central glioma of the spinal cord is here described, clinically and anatomically. The patient was a woman of 51, who complained of dragging pains in the back and in the left lower limb. Both legs were œdematous and had a considerable degree of flaccid paresis, especially in the muscles of the thighs. There was slight tactile anæsthesia below the level of the umbilicus; the knee jerks were increased, the plantar reflexes were not elicited; micturition was precipitate. The paresis of the lower limbs gradually became absolute, with complete incontinence of urine and partial loss of control of rectal sphincter, the deep reflexes remaining increased. The patient developed a decubitus, to which an erysipelatous infection became superadded, which proved fatal. Post-mortem the spinal cord showed a large intramedullary glioma extending from the highest cervical region down to the conus terminalis, and varying in its thickness at different levels of the cord. The tumour appeared to be derived from the ependymal epithelium. It was interesting to note the comparatively slight degree of motor paralysis in comparison with the wide extent of the tumour. PURVES STEWART.

PLASMA CELLS IN THE SPINAL CORD IN GENERAL (77) PARALYSIS. (Plasmazellenbefunde im Rückenmark bei progressiver Paralyse.)

GUSTAV OPPENHEIM, *Archiv für Psychiat. u. Nervenkrankh.*, Bd. 44, H. 3, 1908, p. 938.

THE pia and the adventitial spaces of the vessels in the cord are always infiltrated with plasma cells. The infiltration is greatest round the posterior border of the cord, and there are accumulations of these cells where the anterior and posterior roots penetrate the cord substance. In the pia there are also numerous branched cells of extraordinary size, with a pale nucleus. These cells contain an enormous quantity of very fine granules. With regard to the vessels, plasma cells are found most frequently in the lymph sheath of the smaller vessels of the white substance; they are infrequently seen in the grey substance. A few isolated ones are found fairly regularly around the larger vessels on either side of the central canal, and around the capillaries of the anterior horns and Clarke's column.

Where there is old-standing sclerosis the plasma cells are small in number. They are most constant in the lateral columns, and in some cases are associated with fresh degeneration, in others not.

The author affirms that we cannot legitimately conclude there is any association between the inflammatory and degenerative changes. The process is certainly not a single one, and perhaps the inflammatory changes are more important than previously thought. DAVID ORR.

THE THYROID GLAND IN GRAVE'S DISEASE. (Pathological (78) Changes as related to the Varying Symptoms.) LOUIS B. WILSON, *Amer. Journ. of Med. Sc.*, Dec. 1908.

WILSON examined the morbid anatomy of the thyroid gland in Grave's disease in 292 cases operated on by Mayo, and in 2 autopsies.

With no knowledge of the clinical aspect of the cases, he endeavoured to estimate their course and severity from the pathological findings.

The symptoms were found to be due to increase of readily absorbable thyroid secretion, produced by hyperplasia of the alveolar parenchymatous cells, with papillary formation in the more severe cases. Exfoliation of the epithelium was the first sign of retrogression of the disease, and this went on to flattening of the epithelium and the formation of eosin-staining colloid secretion, sometimes resulting in cystic goitres.

The nature of the change might be either an intra-alveolar hyperplasia of epithelium, or an increase in the number of alveoli, resembling adenomatous formation. The first type tended to develope more quickly, but was less progressive than the second. Both underwent the same processes of retrogression.

The estimation of the nature of the case from the morbid anatomy accorded remarkably with the clinical facts.

J. G. GREENFIELD.

CLINICAL NEUROLOGY.

CONTRIBUTIONS TO THE KNOWLEDGE OF PARALYSES OF (79) THE RECURRENT NERVE. (Beiträge zur Kenntnis der Lähmungen des Nervus recurrens.) O. KÖRNER and M. SEBBA, *Zeitschr. f. Ohrenheilk.*, Bd. 56, H. 4.

IT has been frequently stated that tabetic laryngeal paralysis affects the left side more often than the right. Burger's statistics show 18 bilateral cases, 4 left-sided and only 1 right-sided; Cahn's, 15 bilateral, 2 left-sided and no right-sided paralysis. Körner and Sebba think that these observations are not correct, because bilateral abductor paralysis is a dangerous and, therefore, obvious condition, whereas unilateral paralysis is often overlooked. Graeffner has, however, examined all the tabetic cases in the Berlin hospitals, and found that, while 14 cases were bilateral, 45 showed left-sided paralysis and only 9 right-sided affection. Such a difference cannot be accidental, but is incapable of explanation if the old theory were still held that the laryngeal paralysis was due to disease of the bulbar nuclei. Cahn has shown, however, that the cause of the paralysis is a neuritis of the vagus-recurrent trunk, so that we must look for the explanation in the anatomical differences of the two recurrent nerves. The frequency (?) of aortic aneurysm in tabes has been suggested as the reason, but Arullani found only 2 cases of aneurysm among 68 tabetics. The authors consider that the real explanation lies in the greater length of the left recurrent nerve, as the toxines circulating in the blood create a greater amount of resistance to the nerve currents in the longer left nerve. If this explanation be correct, it must also hold good for other causes of toxic neuritis, and such proves to be the case: thus, out of 38 cases of toxic neuritis due to diphtheria, influenza, typhoid, and beri-beri, 20 were bilateral and 18 left-sided; in no instance was the right nerve alone affected. Lead, arsenic, copper, alcohol, and tobacco produce similar but less striking results. In the second part of the paper the authors call attention to the fact that tabetic laryngeal paralysis is almost always observed in the stage of abductor paralysis, and often remains in this condition for many years, whereas paralysis due to pressure by aneurysm, tumour, glands, etc., almost invariably passes on quickly to complete recurrent paralysis: thus Burger found that 34 out of 35 cases in tabes showed pure abductor paralysis (or a combination of abductor and internal tensor paralysis) and only 1 case complete recurrent paralysis. On the other hand, out of 55 cases of paralysis due to mechanical injury (aneurysm, glands, etc.), 44 were complete recurrent and only 11 abductor paralysis. The authors finally point to the need for further observation and research on this subject.

J. S. FRASER.

PARALYSIS OF BOTH ANTERIOR CRURAL NERVES AFTER (80) A GYNECOLOGICAL OPERATION. (Beiderseitige cruralislähmung gynäkologischer Operation.) MENDEL and WOLF, *Berl. klin. Wochenschr.*, 1908, No. 48.

THE patient, æt. 34, was operated upon per vaginam for retroverted uterus and cystic tumour of the adnexa.

Two assistants supported the lower extremities in a position of flexion and abduction for a period of one hour and a half.

Numbness of both lower limbs and inability to move them was complained of by the patient on the days following the operation.

All passive movements of the limbs were free, but the patient was unable to flex the thighs or extend the legs, the movements of abduction and adduction of the thighs and movements of the feet and toes being normal.

The patient was unable to stand or walk. There was marked atrophy of both quadriceps extensor muscles, the patellar reflexes being absent, the Achilles jerk was brisk, and thermal and tactile sensibility was normal.

Pressure over the anterior crural nerves was painful. Electrical reaction showed the reaction of degeneration in the area of distribution of the nerve.

The obturator and sciatic nerves were unaffected.

There was thus severe paralysis of both nerves following an operation under ether, supposed by Klempner and others to be due to a toxic neuritis as the result of the anæsthetic.

The authors, however, believe it to be due to mechanical pressure on the nerves, as dissections on the cadaver have satisfied them that with hyperflexion and abduction of the thigh the anterior crural nerve is pressed against Poupart's ligament by the ilio-psoas muscle. E. SCOTT CARMICHAEL.

DIPHTHERITIC PARALYSIS. J. D. ROLLESTON, *Practitioner*, (81) Jan. 1909, p. 110.

THIS paper is based on 1500 cases of diphtheria observed in the course of six years. 335 cases, or 22·3 per cent., showed some paralysis. 135 were severe, 58 were fatal.

The direct relation between the initial angina and the frequency and severity of subsequent paralysis is shown by the fact that the percentage of paralysis cases, after very severe diphtheria, was 71·2; after severe, 48·5; after moderate, 15·3; after mild, 2·7; and after very mild, 0. Paralysis was also more frequent in the faucial cases in which there was nasal involvement (45·1 per cent.) than in those in which the nostrils were not affected (14·4 per cent.). Affection of the tendon jerks as well as actual paralysis was also more frequent after severe attacks. The superficial reflexes were only lost in cases of generalised paralysis. A table shows that paralysis and affection of the tendon jerks are commoner and more severe in children than in adults. The relation of the frequency and severity of the paralysis to the day of disease on which antitoxin was injected is shown by the fact that of 61 injected on the first day, only 3 suffered paralysis; of 319 injected on the second, 50; of 367 third-day cases, 75; and of 301 fourth-day cases, 90. The three commonest palsies are the least serious, and the dangerous palsies are much less common.

Thus palatal palsy occurred in 228 cases, cycloplegia in 169, squint in 71, cardiac paralysis in 55, paraplegia in 31, pharyngeal in 22, diaphragmatic in 10, and hemiplegia in 1.

The date of onset of each palsy is shown in a table. Paralyses of the palate, heart and ocular muscles occur first, while palsies of the pharynx, diaphragm, vesical and rectal troubles, paraplegia, with disturbance of sensation and vaso-motor changes, such as erythema, urticaria, dermatographia, and hyperidrosis, are late phenomena. Korsakoff's psychosis has not been noted in diphtheria. Of the 58 fatal cases of paralysis only 3 occurred after the end of the first week, death being due in these 3 to diaphragmatic paralysis. In all the rest death was due to cardiac paralysis, which had first developed before the beginning of the third week.

Complete recovery from diphtheritic paralysis is the rule, death the exception. The writer had not seen a case of chronic palsy. The prognosis depends on the age of the patient, the situation of the palsy, and the date of onset. Precocious paralysis and progressive enlargement of the liver are unfavourable signs. A well-marked serum reaction is of good augury. Prophylaxis should be attempted by rest in bed in the recumbent position from periods ranging from three weeks, after mild angina, to seven or eight weeks after a severe attack. The writer does not use strychnine and brandy during the acute stage, but has found the administration of adrenalin chloride of service. Rectal feeding is safer than nasal feeding during pharyngeal paralysis. The success of the serotherapy in diphtheritic palsy is attributed not to its specific action, but to suggestion. AUTHOR'S ABSTRACT.

A CASE OF POLYNEURITIS OF AUTOTOXIC ORIGIN, WITH (82) KORSAKOW'S SYNDROME; WITH REPORT OF AUTOPSY AND MICROSCOPICAL FINDINGS.

MARY O'MALLEY and SHEPHERD IVORY FRANZ, *Amer. Journ. Insan.*, Vol. lxv., No. 2, Oct. 1908.

THIS paper describes the case of a married woman, aged 59, who presented symptoms of polyneuritis, with Korsakow's syndrome. As far as was known there was no history of alcoholism, nor could any other cause be made out.

Auditory and visual hallucinations were present, as also loss of orientation, impairment of memory and attention, confusion and confabulation.

The neuritis was distributed in the arms, legs, and body. There was pain on pressure over nerve trunks and on muscular movement. There were also muscular tenderness and tremors, foot and wrist drop, and œdema. The condition of deep and superficial reflexes is noteworthy. The knee jerks were exaggerated for a month after the patient's admission to hospital. Thereafter they gradually diminished till, eight weeks after admission, they were hardly perceptible. The tendo-Achilles reflexes were also exaggerated, and remained so for a longer period than the knee jerks. For a week after the patient's entrance to hospital no plantar reflex could be obtained. Then the toes began to move slightly. Later on these reflexes became normal. Babinski's sign was at no time present. Involuntary evacuations of bowel and bladder occurred, and a bedsore was present.

Sciatic and brachial nerves, especially the former, showed (by Marchi stain) evidences of acute degeneration. Sections of the spinal cord stained by Weigert-Pal method showed a thinning at the periphery—slightly exaggerated in the direct pyramidal tracts in dorsal and sacral regions. In the cervical part many fibres in the septomarginal root zones did not take the stain well, and this region appeared thinned. Marchi sections showed in the cervical region a marginal degeneration, deeper in the direct cerebellar tract and in portions of the columns of Burdach and Goll and Gower's tract. In the dorsal region all degenerated fibres were marginal; in the lumbar there were, besides this, a special number of degenerated fibres in the anterior longitudinal bundles.

In the cells of grey matter, particularly in the anterior horn, there was an accumulation of chromatic substance, staining very deeply with osmic acid. A. HILL BUCHAN.

POLYNEURITIC BRACHIAL DIPLEGIA, APOPLECTIFORM IN (83) ONSET, ETC., IN LEAD TOXÆMIA. (Diplégie brachiale polynévritique à début apoplectiforme, avec troubles mentaux, au cours d'une intoxication saturnine chronique.) CLAUDE and LÉVI-VALENSI, *Rev. Neurol.*, Nov. 30, 1908, p. 1189.

ABSOLUTELY sudden onset of paralysis in the arms, from shoulders to fingers, with subsequent reaction of degeneration in the muscles; no sensory change whatever; subsequent incessant fibrillary twitching of the affected muscles; lower extremities normal. Under treatment the patient's condition greatly improved. She was accustomed, as a professional painter of post-cards, to put the paint-brush in her mouth, and she presented characteristic symptoms of chronic lead toxæmia. S. A. K. WILSON.

NERVOUS DISORDERS OF THE UPPER EXTREMITIES DUE TO (84) ARTERIOSCLEROSIS, DYSKINESIA AND PARÆSTHESIA INTERMITTENS.

(Ueber nervöse Störungen der oberen Extremität bei Arteriosklerose.) OSCAR WANDEL, *Muenchener mediz. Woch.*, Nov. 3, 1908, p. 2268.

THE author deals with the effects of arteriosclerosis on the peripheral nervous system. The symptoms produced are somewhat similar to those met with under other conditions, such as neuritis, but must be distinguished from these. They consist essentially in such sensory changes as are usually implied in the term acroparæsthesia, coupled with slight motor disturbances, loss of power and of skill in executing fine movements, and a tendency to tiring easily. The nervous disturbances do not seem to have a direct relationship with the degree of arteriosclerosis, and *vice versa*. Racial regional and climatic conditions undoubtedly play an important part in connection with the subject, but could be excluded in the cases analysed from the author's clinic. Thirty-two cases had been observed in a period of four years. No Jewish patients were among them, and the majority were women. The latter seem more liable to be affected in the arms and hands, men more often suffering in their legs. His explanation is that occupation plays a very important determining part—those working mostly with their arms usually suffering mostly in their arms, and correspondingly with the lower extremities. He quotes the occupations of his patients in support of his view. In some few cases the tongue was affected simultaneously with the upper extremities. The symptoms are often paroxysmal in their onset and induced by exercise or severe exertion. As time goes on they tend to become more continuous. The sensory changes are usually diffuse, but in some rarer instances may be localised in the distribution of a peripheral nerve—most commonly the ulnar. The explanation of this has been afforded by Lapinsky, who bases his arguments on clinical and pathological evidence combined. In such cases he has found œdema of the nerve sheath and marked changes in the endo- and peri-neurium due to excess of connective tissue. This has been brought about by endarteritis of the nutrient twigs from the ulnar artery to the corresponding nerve. Bregmanns has found that the ulnar artery is more often involved by arteriosclerosis than any other—the anterior tibial coming next in order of frequency. Somewhat similar symptoms may be produced by pressure of a thickened artery (subclavian) on the cords of the brachial plexus, but in such cases the painful spasms affect the whole arm and not the extremities alone.

C. M. HINDS HOWELL.

TABES AND ACUTE BULBAR PALSY. (Tabes dorsalis und akute (85) (apoplektische) Bulbärparalyse.) KURT HALBEY, *Neurolog. Centralbl.*, Jan. 2, 1909, S. 7.

THE rarity of bulbar palsy in tabes is indicated. The patient whose case is here described was a man of sixty-seven, in whom the first symptoms of tabes appeared ten or twelve years previously. At the age of sixty-four symptoms of bulbar palsy developed, due apparently to an acute vascular lesion. EDWIN BRAMWELL.

GASTRIC CRISES IN TABES AS A RESULT OF MORPHIA. (86) (Gastrische Krisen der Tabiker als Folge-erscheinungen des Morphimus.) P. A. OSTANKOW, *Neurolog. Centralbl.*, Jan 2, 1909, S. 14.

THE author holds that the long-continued use of morphia is capable of producing gastric crises in tabes, and that though it relieves attacks of pains and crises for the time being, afterwards they are more frequent and of increased intensity. He records a case in support of these views. True gastric crises following the use of morphia, as well as those which appear spontaneously, may be associated with a rise of temperature and diminution of the quantity of urine, from which the author concludes that the gastric crises are probably of toxic origin. EDWIN BRAMWELL.

HÆMATEMESIS IN THE GASTRIC CRISES OF TABES. (Blut- (87) brechen bei Crises gastriques tabétiques, Sektionsbefund.) JENÖ KOLLARITS, *Neurolog. Centralbl.*, Jan. 2, 1909, S. 11.

THE patient whose case is reported by Kollarits suffered during the last three months of life from sudden attacks of severe pain in the region of the stomach, which were followed by vomiting. These symptoms had no relation to the taking of food. For a few weeks prior to death profuse hæmatemesis and occasional malæna were noted. The hæmorrhage was so great that ulcer or carcinoma was suspected. At the sectio typical changes of tabes were found with no gastric or intestinal ulceration. The author regards these symptoms as gastric crises, and concludes that a pronounced hæmatemesis in tabes is not incompatible with such a diagnosis.

Vulpian, in 1879, referred to several cases of hæmatemesis occurring during the gastric crises of tabes. Charcot was of opinion that the hæmorrhage was due to an ecchymosis from the gastric mucous membrane analogous to the cutaneous hæmorrhages which are sometimes seen in the distribution of lightning pains. Neumann, who in 1905 collected the literature up to date, believed that there must be an actual breach of continuity in the mucous membrane, the result of rupture of a blood vessel due to increased blood pressure. EDWIN BRAMWELL.

UTERINE CRISES IN TABES. (Uteruskrisen bei Tabes.) FRANZ (88) CONZEN, *Neurolog. Centralbl.*, Jan. 2, 1909, S. 18.

THE patient was a woman aged 33, who suffered from ataxic tabes. The symptoms for which she specially sought advice were attacks of pains lasting for two or three minutes, and similar in character to those experienced at childbirth. A gynecological examination revealed nothing abnormal beyond a catarrhal endometritis and some ovarian hyperæsthesia. This symptom-complex is referred to by Abadie as "crises douloureuses de faux accouchement," while in the German literature "labour crisis" has been employed as an equivalent term. EDWIN BRAMWELL.

PYRAMIDON IN THE LIGHTNING PAINS OF TABES. (89) **(A Propos du Pyramidon contre les douleurs fulgurantes du Tabes.)** M. MILIAN, *Gaz. des Hôp.*, Dec. 1, 1908.

DR MILIAN has used pyramidon for several years in the treatment of the lightning pains of locomotor ataxy. He considers it to be a true "specific," and infinitely superior to antipyrin, which is liable to cause digestive disturbances, as well as acting injuriously on the kidneys.

The dose he recommends is 75 centigrammes thrice daily in cachets. C. T. HAND NEWTON.

CLINICAL CONTRIBUTION TO OUR KNOWLEDGE OF HERE- (90) **DITARY ATAXIA. (Klinische Beitrag zur Kenntnis der hereditären Ataxie (Friedreichschen Krankheit.))** G. FLATAU, *Deutsche Zeitschr. f. Nervenheilk.*, 1908, Bd. 35, S. 461.

TWO cases of Friedreich's disease are described in brothers aged 17 and 11 years. They showed the ordinary features of Friedreich's ataxia, and no new points of importance are elicited.
PURVES STEWART.

PAROXYSMAL PARALYSIS. (Ueber die paroxysmale Lähmung.)
(91) M. BORNSTEIN, *Deutsche Zeitschr. f. Nervenheilk.*, 1908, Bd. 35, S. 407.

A CASE of flaccid periodic paralysis is here described, in which the usual features of the disease were well marked. The patient, a boy of 16, had suffered for six years from recurrent attacks of flaccid paralysis of the limbs every four or six weeks, the attacks generally occurring in the night, the patient waking up paralysed and remaining in this condition for twenty-four to thirty-six hours, passing off gradually. He had suffered from convulsions from the age of 2½ to 4 years, and was also ricketty. During the period of flaccid paralysis the deep reflexes were increased, but the plantar reflexes remained flexor in type. Faradic excitability in the paralysed muscles was diminished or absent.

The author discusses the probable pathology of the disease, and comes to the opinion that the malady depends on an affection of the grey matter of the anterior cornua, probably toxic in origin. He regards it as closely analogous to epilepsy, a similar affection of the motor cortex. He does not, however, discuss the angiospastic theory of the disease, a theory which, in the opinion of many competent neurologists, is much more in accordance with the clinical phenomena. PURVES STEWART.

VERTEBRAL OSTEOARTHROPATHY. (Osteoarthropathia vertebralis.)
(92) HANS HAENAL, *Neurolog. Centralbl.*, Jan. 2, 1909, S. 20.

A CASE of tabes with vertebral osteoarthopathy is here described. A distinct prominence was present in the lumbar region of the vertebral column, and both atrophic and hypertrophic changes in the vertebræ were detected on X-ray examination. A supporting jacket was of undoubted benefit in the case reported. Frank, in 1904, collected twenty-six instances of vertebral arthropathy in tabes from the literature. EDWIN BRAMWELL.

PNEUMOCOCCAL MENINGITIS WITHOUT LEUCOCYTOSIS OF THE CEREBRO-SPINAL FLUID. (Méningite très riche en pneumococques et sans réaction leucocytaire du liquide céphalo-rachidien.)
(93) CASTAIGNE and DEBRÉ, *Bull. et mém. de la Soc. Méd. des Hôp. de Paris*, 1908, p. 594.

CASTAIGNE and Debré record three cases of the above condition in which the absence of leucocytosis is attributed to the meningitis having attacked debilitated individuals whose natural methods of defence were paralysed. An absence of spinal leucocytosis may also be met with after relatively mild attacks, and may then be explained by the low degree of virulence of the micro-organisms.

J. D. ROLLESTON.

TWO CASES OF TUMOUR IN THE MIDDLE FOSSA OF THE (94) SKULL. JUDSON BURY, *Med. Chron.*, Dec. 1908.

CASE I.—Endothelioma growing from dura mater and involving the 3rd, 4th, 5th and 6th nerves on the side of the lesion and probably the facial centre in right cortex. Chief symptoms: severe pain, anæsthesia of face, neuro-paralytic ophthalmia and ophthalmoplegia ; limbs unaffected.

Male, æt. 32, began to suffer from severe pain in the jaw and ear on the right side. A year later the right eye became inflamed and vision was gradually lost. Subsequently the right side of the face became slightly swollen; there was anæsthesia in the territory of the 5th nerve and the masseter became weak and wasted. The tension of the right eyeball was increased and its movements became greatly impaired. The conjunctiva was hyperæmic; the cornea was cloudy and the seat of a small ulcer. Mouth opened with difficulty, and only the tip of the tongue could be protruded. Right side of palate swollen and ulcerated. No paralysis of limbs; knee jerk normal.

Diagnosis.—Tumour in right middle fossa involving oculomotor nerves and trigeminus. The first symptoms indicated that the tumour had started near the 5th nerve, whilst the neuropathic keratitis suggested implication of the Gasserian ganglion.

An attempt to remove the growth was considered inadvisable. During the last few weeks of life partial paralysis of the left side of the face was noticed. Death occurred about twenty-one months after the onset of the first symptom. A growth—proved to be an endothelioma—was found in the position diagnosed; it extended forwards into the orbit and upwards into the cerebrum.

CASE II.—Endothelioma growing from dura mater and involving the 3rd, 4th, 5th, 6th and 8th nerves on the side of the lesion and probably the motor centres for the 7th and 12th nerves ; limbs unaffected.

Male, æt. 31. For the first sixteen months the symptoms in this case were also almost entirely subjective, the chief being severe and constant headache, at first mainly at the back, later mainly on the right side of the head. In the seventeenth month and onwards for the next three months till death there were definite signs of an intracranial lesion—namely, paralysis of the 3rd, 4th, 5th, 6th and 8th nerves on the right side and of the 7th and 12th nerves on the left side. Shortly before death there was apparent improvement; thus the deafness diminished, the ptosis almost disappeared, and subjective sensations were less marked. There was no optic neuritis, and vomiting was absent from first to last.

The necropsy revealed a firm mass in the fore part of the middle fossa; it projected into the orbit and upwards into the temporo-sphenoidal lobe. Probably the growth began in the outer part of the fossa, and then extended inwards.

The development of left facial paralysis in both cases was probably due to upward pressure on the cerebrum.

AUTHOR'S ABSTRACT.

THE CAUSES AND SYMPTOMS OF THROMBOSIS OF THE (95) CAVERNOUS SINUS. S^T^CLAIR THOMSON. Paper read at the Brit. Med. Assoc., Sheffield, 1908.

THE causes of thrombosis of the cavernous sinus are chiefly found in diseases of the nose and ear, and therefore come within the dominion of the oto-rhinologist. The symptoms are more prominent and distinctive in the eye, and hence fall largely under the observation of the ophthalmic surgeon.

The source of infection is frequently attributed to some lesion on the nose, upper lip, a carious tooth, or a phlegmon of the face and neck, when the much more probable focus, the accessory cavities of the nose, has not even been suggested.

A diagram served to recall the anatomical relations of the blood spaces. It is seen that anteriorly the cavernous sinus receives the ophthalmic vein. Through this vein infection might be carried—

1. From the upper eyelid and forehead.
2. The lachrymal gland.
3. The globe of the eye and its muscles.
4. The orbit.
5. The nose (by the anterior and posterior ethmoidal veins).
6. The lower eyelid and the face (through the anterior facial veins).

These sources of infection are so evident, and have long been so well recognised, that it is unnecessary to insist on them.

Passing further back we see that twigs of pterygoid plexus join the sinus through the base of the skull. This route has sometimes been invoked for the transit of infections from the pharynx. It is a remote, restricted, and doubtful possibility.

Posteriorly the cavernous sinus communicates with the superficial and inferior petrosal sinuses, and through them with the lateral. This explains the not infrequent thrombosis from pyogenic infections of the ear.

But still closer and in more intimate contact lies the sphenoidal sinus, separated only from the cavernous sinus by a wall of bone which may be as thin as notepaper, or even with physiological defects in it, so that the mucosa of the sinus is in direct contact with the dura mater (Zuckerhandl).

The diagram showed the numerous veins which pass directly from the sphenoidal to the cavernous sinus, and in addition to the possibility of infection by direct transit through the bone or by the blood stream, we know that organisms can travel from one cavity to the other by the lymph stream.[1]

Finally, by means of the circular sinus, we see not only how readily infection may pass from the cavernous sinus of one side to that of the other, but how direct is the contamination with any pyogenic process in the pituitary body or adjoining body of the sphenoid bone.

Next to disease in the sphenoidal sinus it would appear that pyogenic infection from the ear is the most common cause. Naturally I have little experience of the cases where infection is carried by the ophthalmic vein and its anastomoses, and I hope my colleagues of this section will correct me if I am wrong in placing it third in frequency. I should be glad to hear if they have observed cases which were undoubtedly traceable to diseases of the face and eyelids, and if it may occur as a complication after operation on the eye or orbit. Infection through the pterygoid plexus I would put last, although the possibility of this route is suggested by a case in which I heard that it occurred after operation on the Gasserian ganglion. I think this route is sometimes suggested without sufficient evidence.

SYMPTOMS OF THROMBOSIS OF THE CAVERNOUS SINUS.

Needless to say the spread of infection to the sinus will depend on the focus from which it starts—in the nose and its accessory sinuses, the ear, the orbit, or the throat and neck. I will simply enumerate some—they may be those of co-existing meningitis:—Pyogenic temperature, rapid pulse, profuse perspiration, rigors, headache, sickness, hebetude, delirium, drowsiness, coma, convulsions, inflammation of the glands of the neck, swelling of the palate or of the cheek.

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[1] Zörkendörfer, *Prag. med. Woch.*, vol. xviii., Mar. 3, 1893, No. 18, p. 209.

But, generally, the possibility of thrombosis of the cavernous sinus is first suggested by the condition of the eyes. The three chief ophthalmic changes are (*a*) papillary œdema, (*b*) chemosis, and (*c*) exophthalmos. They develop from six to sixteen days from the onset of symptoms indicating the spread of infection.

Paralysis of the ocular muscles generally occurs; but the movements may continue. In one case the ocular symptoms developed under observation, and followed each other in regular order, the proptosis not making its appearance till several hours after the orbital paralysis had become complete.[1]

The condition of the pupils varies. They may be normal, unequal, small, and not reacting to light, dilated, dilated and not reacting, or, in medium dilatation, with only slight oscillation. Doubtless the explanation of these observations lies in the fact, noted in my own case, that the condition of the pupils varies, for I sometimes found them equal and reacting, and at other times medium-sized or widely dilated.

The fundus may be normal in rapid cases or at the commencement. Later on there may be congestion of the retinal veins, papillary stasis, papillary œdema, papillary atrophy, or optic neuritis. The absence of papillitis or of swelling has been observed.

It is difficult in most cases to test the vision; it may be good or there may be complete blindness.

Tenderness of the eyeball may be met with.

AUTHOR'S ABSTRACT.

DISSEMINATED SCLEROSIS AFTER MENTAL SHOCK. (Ueber (96) multiple Sklerose nach psychischen Shock.) WALLBAUM, *D. med. Wchnschr.*, Dez. 10, 1908, S. 2159.

IT is now a generally accepted view that mental shock may produce a functional, and mechanical shock an organic, disease of the nervous system, but as yet there are few recorded cases to prove that mental shock may also produce organic disease. The writer gives in detail three cases in which a disseminated sclerosis followed closely on an accident, and in the etiology of which the mental trauma was the essential factor.

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[1] James Russell, *Medical Times and Gazette*, 1878, vol. i., June 8, p. 614.

There are many different views as to the etiology of disseminated sclerosis. The writer thinks that Leyden's view, that the process is of a myelitic nature, is the most probable one, and that mental shock, even without spinal irritation, may by vaso-motor processes produce ischæmic conditions in the substance of the cord, followed by necrosis of the nervous elements. This seems probable when we remember the influence of the mind on the vaso-motor centres, as, for instance, in the pallor or flushing of fear, etc.

Wallbaum concludes that mental shock alone may *produce* disseminated sclerosis, but cannot alone *cause* it, the other essential factor being a predisposition of the nervous system, as shown by the history of neurasthenia, tendency to alcoholism, etc., and that the process is a myelitic one, produced by means of the vaso-motor system. ALEXANDER BRUCE.

APHASIA AND HEMIACHROMATOPSIA. MERLE, *Rev. Neur.*, (97) Nov. 15, 1908, p. 1129.

THE patient, a man of 57, had a sudden attack, as a result of which he showed a "general intellectual impairment" ("memory, sums"), and a further disturbance of a more particular nature in the function of vision; difficulty in remembering names and places and the position of various places (with which he was familiar) in relation to each other, alexia, and agraphia. In addition, he had right homonymous hemianopia for colours only (hemiachromatopsia), with diminution of visual acuity in the same distribution. There was no hemiplegia or disturbance of sensation.

This is a clinical record merely, and while the case is of interest and adds to the few authentic instances of the condition, the author does not dogmatise, beyond stating that the lesion is almost certainly in the distribution of the posterior cerebral artery. S. A. K. WILSON.

CASE OF LEFT-SIDED AGRAPHIA AND APRAXIA, WITH (98) RIGHT-SIDED PARALYSIS. (Fall von linksseitiger Agraphie und Apraxie bei rechtsseitiger Lähmung.)

Liepmann and Maas, *Journ. f. Psych. u. Neur.*, Bd. x., Hft. 4 u. 5, Jan. 1908, S. 214.

This case (Ochs, a tobacco-worker, aged 70) is of peculiar interest and importance. It may well become a classic in the history of the modern development of aphasia and apraxia. It is the first case of pure and isolated agraphia in which an anatomical examination has been carried out in view of our present knowledge of apraxia.

Clinical.—

(*a*) Severe right-sided hemiplegia.

(*b*) No paralysis of voluntary movement of the left arm, no ataxia or loss of the sense of position of the limb.

(*c*) General mental condition very good; orientation perfectly good.

(*d*) Spontaneous speech not frequent and a little indistinct; no difficulty in finding words or naming objects; no difficulty in repetition of letters and words; no difficulty in understanding words; no difficulty in reading letters; occasional difficulty with long words.

(*e*) Complete inability to make any attempt at writing with the left hand, either spontaneously or to dictation. Complete inability to copy.

(*f*) Characteristic dyspraxia or apraxia for certain movements of the left hand and arm, with perseveration.

There is every reason to regard the agraphia as part of a general left-sided apraxia, and therefore the anatomical result given below is to be taken as indicating the areas concerned in the general "usefulness" or eupraxia of the left arm. Apraxia may, however, exist without agraphia.

Anatomical.—

1. The right hemisphere is intact.

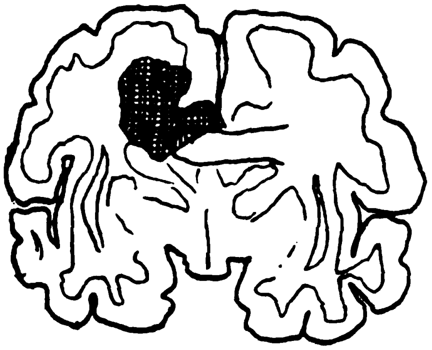
2. In the left hemisphere a large area of softening in the distribution of the posterior branches of the left anterior cerebral artery, in particular the branch to the corpus callosum; this area of softening involves the white matter under the frontal convolutions, specially towards the mesial side, the white matter of the gyrus fornicatus, and of the paracentral lobule, and in particular the whole of the left half of the corpus callosum in its anterior three-quarters to four-fifths as well as its area of origin in the left hemisphere.

The cortex of the frontal convolutions, including the end of the second frontal (the "writing centre") is intact. The rest of the cerebral cortex is normal.

3. A small area of softening in the left half of the pons is chiefly responsible for the right hemiplegia. The paralysis of the right arm is entirely sub-capsular, of the right leg partly so.

4. Very small areas of softening in the right cerebellar peduncle, in the pons to the outer side of the fillet, and in the right optic thalamus.

Thus support is given to the view (Liepmann, Van Vleuten, Hartmann) that a lesion of the anterior part (at least) of the corpus callosum causes dyspraxia of the left hand, *i.e.* interferes with the lead of the left hemisphere over the right. The accompanying figure indicates the site of the main lesion in a frontal section at the level of the middle of the island of Reil.



S. A. K. Wilson.

REVERSED WRITING IN A LEFT-HANDED CHILD. (Umgekehrte Schrift bei einem linkshändigen Kinde.) J. Ohm, *Klinik f. psych. u. nerv. Krankheit*, Bd. 3, H. 3, 1908.

(99)

The case here recorded is that of a girl, aged 9, who had suffered since birth from fixation of the right shoulder-joint, with a moderate degree of contracture at the elbow. The child had used the left hand with which to write from the time she went to school. She begins to write in the right-hand lower corner of her slate, and proceeds from right to left. She writes line above line in this manner. She writes the words upside down, so that they are readable by anyone without the aid of a mirror, and with scarcely less rapidity than her contemporaries who write in the natural way. The mirror writer writes from right to left, but from above downwards. His writing is only decipherable by the aid of a mirror, while that of this child appears absolutely natural when the slate is held upside down. The child has written in this way from the beginning. When she was asked by the author if this was the usual way to write, she said "No," and when requested to write like other people she began quite spontaneously at the top right hand corner of the page, and wrote from above downwards, in mirror writing, as if she had never been accustomed to anything else. When the pen was placed in her right hand she wrote from left to right and above downwards in the usual way, but the specimen was very defective as compared with those above noted.

The child's vision was quite acute. She was, however, somewhat less intelligent than her contemporaries. She did not know the year, the month, nor the day of the week. She was unable to repeat the alphabet correctly. She could not name the months and days of the week in the correct order. She knew nothing of the chief rivers and mountains of Germany. She was scarcely able to read, and it was interesting to note that among the words she was asked to decipher she read "hei" as "ich" and "heize" as "zie," as if it would almost seem she were reading from right to left. EDWIN BRAMWELL.

HEADACHE AND OCULAR TREATMENT. FREELAND FERGUS, (100) *Glasgow Med. Journ.*, Nov. 1908.

THE writer enumerates the different types of eye-strain which may give rise to headache, quoting a select number of cases from his private practice in which persistent headaches have been successfully treated by the prescribing of suitable glasses. Many failures in treatment are due to perfunctory or hurried testing—"a proper testing will take about an hour." To be an efficient ophthalmologist one should have "a good knowledge of plane trigonometry," and should be "familiar with some of the ideas contained in the calculus."

Our author deplores the possibility that some "spectacle-sellers" are, "as regards optics, better equipped than are a few ophthalmic surgeons." ARTHUR J. BROCK.

THE DIFFERENTIAL DIAGNOSIS BETWEEN NEURASTHENIA (101) AND SOME AFFECTIONS OF THE NERVOUS SYSTEM FOR WHICH IT IS OFTEN MISTAKEN. TOM A. WILLIAMS, *Arch. of Diagnosis* (New York), Jan. 1909.

So many psychoses and neuroses are characterised by the neurasthenic states in early stages, and early treatment is of such importance in many of these and is so entirely different from that of neurasthenia, that any clinical signs permitting differentiation are of the greatest importance. The author tries to indicate pathognomonic differences which even in the early stages will enable the clinician to distinguish the hebephrenic form of dementia præcox, hysteria, mythomaniacal and suggestion neurasthenias, including the false gastropaths, psychasthenia and the anguish neuroses, from the true idiopathic neurasthenia. He then shortly cites a case exhibiting the curable paranoia of Friedmann of neurasthenic etiology, and very shortly discusses dementia paralytica and the manic-depressive pre-senile and senile melancholies, indicating in each the main differential symptom against neurasthenia.

The criterion employed to distinguish hysteria is its susceptibility of production by suggestion and removal by suggestion-persuasion, as enunciated by Babinski, and confirmed last year at the Paris Neurological Society and developed by him elsewhere (*New York Med. Journ.*, 1908). The latency of suggestion is shown, and also its power to produce secondary neurasthenia, as in the false gastropaths of Déjérine, and even tics and obsession simulating those of the psychasthenia of Janet. The criteria of the latter are indicated at some length, consisting mainly of the relative absence of fatigue along with the presence of the particular stigmata, such as morbid fear, chronic inadequacies, altered sense of reality, and episodic agitations of motor, intellectual, and emotional content. The psychogenetic origin of these distinguishes them from the similar complications of physical nature which may occur during an attack of neurasthenia. Rest is without avail in these cases. Psychotherapy is indicated, as it also is in the pseudoneurasthenia of vacuity, of hysterical and mythomanic etiology.

AUTHOR'S ABSTRACT.

TREATMENT OF NEURASTHENIA. CLINICAL LECTURE. (102) (Die Behandlung der Neurasthenie.) MÜLLER, *D. med. Wchnschr.*, Dec. 10, 1908, p. 2153.

THIS is an interesting and helpful lecture, containing in detail suggestions as to the treatment of the various forms of neurasthenia, which seem to us to be based on thoroughly sound and practical principles.

ALEXANDER BRUCE.

SIMULATION IN TRAUMATIC NERVOUS DISEASES. (Untersuchungen über Simulation bei Unfallsnervenkranken.) (103) BECKER, *Klinik. f. psychis. u. nerv. Krankh.*, Bd. 3, H. 2, 1908, S. 127.

THE writer notes that since the passing of the accident compensation laws the picture of simulated nervous disease, hitherto rarely observed, has become familiar. During the first half of the last decade, physicians, judging from the preponderance of subjective symptoms, the common complaints of inability to work although the muscular system was quite normal, etc., were inclined to think that simulation was at the root of the great majority of the cases, the object being to secure the highest possible compensation. He thinks that now, however, with the growing knowledge of mental boundary states, it is being gradually realised that this view is exaggerated, and that many cases are essentially those of a neuro-psychosis or a psycho-neurosis. In determining such cases a thorough knowledge of mental morbid conditions is absolutely necessary.

He discusses the various symptoms which may lead the physician to set aside the conception of simulation, even although the vagueness of the complaints, etc., may have at first suggested this view. He notes the frequency with which the symptoms are exaggerated, but says that one must beware of giving on this account a diagnosis of simulation of the *whole* condition until every symptom has been analysed and compared. He gives some indications as to the details of such an examination, going thoroughly into the question of the reflexes, of the various kinds of tremor that may be present, etc., and gives cases to show the danger of a dogmatic, prejudiced diagnosis. He lays stress on the fact that the existing accident compensation laws have created a false picture and enormously increased the difficulty of arriving at a true conception of the facts of the case. ALEXANDER BRUCE.

CONSIDERATIONS AS TO THE NATURE OF HYSTERIA, WITH (104) THEIR APPLICATION TO THE TREATMENT OF A CASE.

TOM A. WILLIAMS, *International Clinics*, Vol. iii., 1908, p. 44.

THE paper endeavours to extract the "least common measure" from the various stigmata and accidents described as hysterical.

After pointing out fallacies to be avoided in examination of sensibility and visual fields, the author excludes cases of "angstneurosis," emotionalism (except that due to suggestion), the organic though inexplicable œdemas and other tropho-neuroses, and cases of deliberate simulation. He cites many instances of the latter, and also others where organic conditions like paralysis agitans, epilepsy and dementia præcox were mistaken for hysteria. The least common measure is then found to be, after Babinski, the *property of provocability by suggestion and removability by suggestion-persuasion.* The latency of suggestions is illustrated by cases, and their origin in dreams touched upon: but the most frequent origin is traced to medical sources, being conveyed unconsciously by the doctor's gestures, facial expression and tone of voice producing fixed ideas in persons too indolent to synthesise and too aboulic to inhibit an impression. Examples of this are given, and the psychology of the influence of strong feeling is explained. The easiness with which hysterical symptoms are removed contrasts with the length and difficulty of the cure of the hysterical habit. This is illustrated by a case of the author's, who then discusses the nature of persuasion.

The origin of hysterical fixed ideas in temporary organic insufficiency is pointed out; and finally it is shown that the traumatic neurosis is a form of hysteria, being due to the three factors of exalted suggestibility due to (1) emotional shock, (2) direct suggestion by the local disturbance, and (3) its emphasis by injudicious sympathy frequently organised into the direct suggestion of a popular idea that such disorders are natural, inevitable, and beyond the power of the individual who acquires them. Neurologists should enlighten their colleagues, so that an end may be put to the medico-legal abuses due to exploded conceptions about traumatic neurosis.

The diagnosis between hysteria and psychasthenia is shortly indicated, and the author concludes:

(1) That all the symptoms which may legitimately be included under hysteria are imposable by suggestion.

(2) That the state of suggestibility comes from (*a*) faulty education, tending to perpetuate and fortify the natural suggestibility of the child; (*b*) cerebral modifications due to organic causes, the action of which necessarily varies among individuals in accordance with (*c*) the hereditary constitution.

(3) Those symptoms which do not arise from this process do not properly belong to hysteria, but originate from causes which former observers had not ascertained.

(4) The avoidance of medical suggestions, both primary and secondary, requires a vigorous technique for the examination of certain individuals.

(5) The success of the treatment as judged by the permanence of its results strongly corroborates this view of the pathogenesis of hysteria.

(6) A thorough and critical examination of the facts and a rejection of the fictions regarding hysteria thus bring us back, as far as practice is concerned, to the seemingly crude and naïve notions of the earlier observers, and involve the rejection of the dissociation theory as explicative of the pathogenesis of the symptoms of hysteria. AUTHOR'S ABSTRACT.

HYSTERICAL FEVER. (Zur Frage des "hysterischen Fiebers.")
(105) F. MÖRCHEN, *Berl. klin. Woch.*, 1908, p. 2220.

MÖRCHEN believes in the existence of hysterical fever of which he records three cases. In one the temperature rose to 114·8°, and in the two others to 107°. The temperature was taken by the physician himself, and only reliable thermometers were used. Mörchen attributes the hyperpyrexia to a vaso-motor change, because in all his cases the patients presented well-marked vasomotor neuroses. Hysterical fever presents an irregular character. Its onset and disappearance are provoked by emotional causes. Constitutional disturbance is slight or completely absent. The pulse respiration and nutrition are little, if at all, affected. In many there is a history of phthisis, but no evidence of that disease can be found. Antipyretics are of no avail, but baths and suggestion are indicated. J. D. ROLLESTON.

SOME REFLEXES IN HYSTERIA. (De Quelques Reflexes dans L'Hystérie. Réflexes Muqueux et Pupillaires.)
(106) HENRI ROGER, *Gaz. des Hôp.*, Dec. 1, 1908.

IN this article M. Roger discusses the significance of the loss of the mucous and pupillary reflexes in hysteria, and he intends in a later article to consider the state of the tendinous and cutaneous reflexes in the same malady.

I. *Pharyngeal Reflex.*—The author in an analysis of 112 cases found that in 69 the reflex was abolished, in 11 reduced, in 14 exaggerated, while in the remaining 18 it was apparently normal. Other investigators have obtained very varying results, some placing the abolition as high as 95 per cent., while others put it as low as 15 per cent.

But loss of this reflex is not peculiar to hysteria, as it frequently occurs in excessive drinkers and smokers, in certain diseases such as epilepsy and general paralysis, and also in non-hysterical cases after treatment with bromide and salicylates. It is interesting to note that in untreated epilepsy the reflex is lost in about 46 per cent. of the cases, whereas when bromides have been administered the percentage rises to 98.

The reflex is not constant in health, and, if present, can be abolished by " suggestion."

II. *Ocular Reflexes.*—(*a*) *Conjunctival Reflex.*—This reflex is lost in a certain number of cases of hysteria, but, on the other hand, it may be exaggerated, especially in those forms of the disease which are associated with migraine or trigeminal neuralgia, or in hysteria affecting children before or at the age of puberty.

(*b*) *Pupillary Reflexes.*—Babinski says that the light reflex is unaffected in hysteria both during and between the attacks. Two cases of suspected hysterical amaurosis, observed by Pierre Marie, eventually developed organic lesions. Sauvineau considers that "mydriasis associated with abolition of the light reflex should be sufficient to exclude the diagnosis of hysteria." But, on the contrary, other observers have noted mydriasis and loss of the light reflex during acute stages of the disease. Westphal has reported the phenomena eight times, and has been able, he says, to demonstrate them to his assistants.

The reaction of the pupil to pain is preserved even when the part selected is anæsthetic (Pitres). C. T. HAND NEWTON.

ON THE ETIOLOGY AND PATHOGENESIS OF TETANY. (Zur (107) Aetiologie und Pathogenese der Tetanie.) CARL RUDINGER, *Zeitschr. f. exper. Pathol. u. Therap.*, 1908, Bd. 5, Heft 2, S. 205.

RUDINGER refers to v. Frankl-Hochwart's division of cases of tetany into seven types according to their origin, viz.: (1) Idiopathic tetany occurring in otherwise healthy individuals; (2) tetany in gastro-intestinal affections; (3) tetany in acute infectious diseases; (4) rare forms of tetany due to foreign substances; (5) tetany of pregnancy, etc.; (6) tetany following removal of the thyroid and parathyroid glands and in thyroid insufficiency; (7) tetany associated with other nervous diseases. The writer, on the other hand, is of opinion that tetany in all such cases is a definite pathological entity, and is intimately connected with parathyroid insufficiency. The function of these glands is the neutralising of certain toxic substances, especially certain of those acting upon the nervous system. Tetany may result from two factors, insufficiency of the parathyroids and the presence of some known or unknown toxin. In each of the above-named seven varieties of tetany, he holds that one or other of these factors may be demonstrated. Thus, hæmorrhages or their remains in the shape of blood-pigment, tuberculosis and other lesions may be found in these glands. Similarly, tetany may, in certain animals, be produced by surgical removal of the parathyroids; or, where it does not supervene, it may be induced by the injection of poisonous substances, which in the normal animal fail to produce an attack. Thus, also, in gastric and similar forms of tetany, it is not so much the presence of some special poison that determines the attack, as an insufficiency of these glands which do not destroy the poison. W. E. CARNEGIE DICKSON.

SYNDROMES OF PLURIGLANDULAR INSUFFICIENCY. THEIR (108) PLACE IN NOSOGRAPHY. (Les syndromes d'insuffisance pluriglandulaire. Leur place en nosographie.) CLAUDE and GOUGEROT, *Rev. de Méd.*, 1908, pp. 861 and 950.

THE characteristic feature of pluriglandular syndromes is that several glands possessing an internal secretion are affected in various degrees. In some cases, though the thyroid lesions play the principal part, they do not exist alone, but are associated with lesions of the testes and sometimes with those of the suprarenals and hypophysis. Thyroid insufficiency alone does not explain the abnormal genital atrophy of acquired myxœdema in the adult. In such cases thyroid opotherapy does not give very satisfactory results, whereas success may be obtained by testicular extracts.

Pluriglandular syndromes are more frequent in children than in adults. Infantilism is not the result of the isolated alteration of a single gland, but is due to disturbance of function of the whole system of internal secretion. Caution must be exercised in the interpretation of pluriglandular syndromes. The symptoms are, as a rule, vague and attenuated. Observers differ in attributing the same symptoms to different glands. Thus some attribute symptoms to the testes which others ascribe to the thyroid.

As a rule anatomical confirmation is lacking. When it is possible, the difficulties of interpretation of slight lesions in organs whose normal structure is still ill-known give rise to much uncertainty. Experiments on animals yield doubtful and often contradictory results. The therapeutical results are difficult to interpret. Improvement observed after opotherapy may be due to rest, hygiene and suggestion. J. D. ROLLESTON.

DISEASES OF GLANDS WITH INTERNAL SECRETIONS IN (109) MELANCHOLICS. (Les Troubles des Glandes à sécrétion interne ches les Mélancholiques.) LAIGNEL-LAVASTINE, *Rev. de Psychiat.*, No. 10, 1908, p. 429.

THE article is a synopsis of several contributions by various authors on the connection between internal secretory glands and melancholia.

Several references are given in which extract of thymus, testicle, ovary, suprarenal or pituitary gland was administered with varying results. R. DODS BROWN.

LOSS OF TENDON REFLEXES IN FUNCTIONAL NERVOUS (110) DISEASES. (Ueber den Verlust der Sehnenreflexe bei funktionellen Nervenkrankheiten.) R. v. HOESSLIN, *Münch. med. Wchnschr.*, Dez. 15, 1908, S. 2597.

IN April 1907 Wigand reported a case of hysteria with loss of the tendon reflexes. Considering the great importance which is attached to Westphal's sign, and to reflex immobility of the pupils as evidence of organic lesion of the nervous system, the writer was led to examine his clinical material collected during twenty-three years for similar cases. He gives details of five cases in which the knee jerks were absent, discusses similar cases reported by other writers, and concludes:—

The knee jerk may be constantly absent in functional diseases (1) as the result of a congenital anomaly of the reflexes (syphilitic disease of the parents being significant in this connection); (2) as the result of severe exhaustion (especially in mania); (3) in rare cases of hysteria and neurasthenia. In the last two cases the disturbances of the reflexes may disappear when the illness is recovered from.

Absence of the knee jerk is thus not always to be regarded as proof of organic nervous disease, if no other determining symptom is present; but without organic disease it is so extremely rare that it is always suggestive of an organic disease, and of possibility of hereditary syphilis.

Loss of the pupil-reflex is still rarer in functional disease. The author only once observed it as an inconstant symptom in hysterical paralysis, and he regards it always as a sign of an anatomical lesion. ALEXANDER BRUCE.

A COMPARATIVE STUDY OF THE VASO-MOTOR REFLEXES (111) PORTER and RICHARDSON, *Amer. Journ. of Physiol.*, Vol. xxiii No. 2, p. 131, 1908.

THE rise of blood-pressure in pressor reflexes, produced by the stimulation of sensory nerves, has been studied in the rabbit, cat, guinea-pig, rat, and hen. The stimulating currents were of uniform intensity, and the rise of blood-pressure is expressed as a percentage of the pressure obtaining before stimulation.

A large number of records—721—have been made, and the percentage values are found to agree closely in the various animals, which differ widely in structure. This leads to the belief that vaso-motor reflexes are, like those of respiration, reproduction, etc., fundamental in character, differing from those associated with skilled movement and other accessory functions.

It is important to determine the developmental position of functions, since they differ in the degree in which they are affected by afferent impulses. Fundamental functions are little disturbed by changes in such impulses, while the accessory, more recently developed, are less able to resist the afferent stream which rises against them in consequence of civilisation.

It is probable, from their practical identity in so many of the vertebrates, that the vaso-motor reflexes in man are essentially like the reflexes obtaining in other high vertebrates.

W. A. JOLLY.

THE FINGER-FLEXOR REFLEX. (Ueber dem Fingerbeugereflex.)

(112) L. JACOBSOHN, *Deut. med. Woch.*, Nov. 12, 1908, p. 1971.

THE author regards the reflex which he describes as comparable in value and significance with Babinski's plantar response (extensor). The reflex may be obtained by supporting the patient's forearm, with the hand and fingers extended. The head of the radius is then struck on its dorsal aspect with the percussion hammer. Flexion of the first finger, particularly of the terminal phalanx, will be observed if the reflex is present. If there is an extreme degree of flexor contracture, as in some cases of hemiplegia, the reflex, of course, cannot be obtained.

Occasionally in functional cases, where the reflex excitability is increased, a flexor movement of the whole finger may occur. The author compares this to the movement of the whole foot sometimes seen in similar cases when the plantar response is being investigated. This flexor movement may be obviated in such cases by first seeing that the finger is properly extended.

In a footnote the author draws attention to a short article by v. Bechterew, "Ueber den Carpometacarpalreflex," *Neurol. Zentralblatt*, 1903, S. 195. This had hitherto escaped his attention, but evidently describes the same reflex.

C. M. HINDS HOWELL.

A CONTRALATERAL PLANTAR REFLEX. (Ueber einen Kontralateralen plantar Reflex.)

(113) HUGO STEINBERG, *Berlin klin. Wchnschr.*, Dec. 7, 1908, S. 2183.

SIX cases are here recorded in which a crossed plantar reflex identical with the phenomenon described by Babinski, Ganault, Byrom Bramwell, and others was present. The author regards the significance of the crossed plantar reflex as identical with that of Babinski's sign in that it indicates involvement of the pyramidal tracts. It is not met with in health, in patients without organic disease of the nervous system, or in hysteria. Further, he is inclined to believe that its presence points to implication of the cerebral portion of the motor tracts, since he has only met with it in cases of hemiplegia. EDWIN BRAMWELL.

CONTRALATERAL REFLEXES: CONTRALATERAL PLANTAR (114) REFLEX OF THE SAME OR OF OPPOSITE TYPE. (Les réflexes controlatéraux: le reflexe plantaire controlatéral homogène et hétérogène.)

KLIPPEL and WEIL, *Nouv. Icon. de la Salpêt.*, July-Aug. 1908, p. 270.

IN a certain number of individuals with no obvious nervous system symptoms, stimulation of the sole of the foot produces a flexor response on both sides: these are usually individuals who are tuberculous and have an exaggerated reflectivity. In hemiplegics stimulation of the sole on the paralysed side is usually followed by a homolateral extensor response alone. Excitation of the sole on the sound side, however, produces bilateral flexion of the great toe, demonstrating the heterogenic contralateral plantar reflex. In a case of paraplegia no contralateral movement from the left (more paralysed) side was obtained; from the right side flexion of the left great toe was seen. Such a case might be considered, from the reflex point of view, as one of left hemiplegia. Slight exaggeration in excitability of one pyramidal tract provokes reflex contralateral plantar flexion; more marked exaggeration produces reflex contralateral plantar extension. Profound degeneration of a pyramidal tract prevents the production of a crossed plantar reflex. S. A. K. WILSON.

THE CROSSED PLANTAR REFLEX. (Réflexe contralatéral plan- (115) taire hétérogène.)

N. KLIPPEL, M. PIERRE WEIL, et SÉRGUEEFF, *Rev. Neurol.*, Juillet 15, 1908, p. 690.

THE case described is that of a patient with right-sided hemiplegia, in whom an extensor response was present on the paralysed side, a flexor response on the left side. Stimulation of the sole of the left foot produced, however, not only flexion of the left great toe, but, in addition, a plantar reflex of the flexor type on the right side. The authors have discovered two similar observations in the literature (Babinski, Ganault). The paper in this *Review* upon the phenomenon (1903, p. 795) has evidently escaped their notice. They have met with several other cases of hemiplegia in which they were able to demonstrate the same phenomenon, while they state that they have also seen it in cases of advanced tuberculosis in which the nervous system was unaffected. In a later communication they propose to discuss its explanation.

EDWIN BRAMWELL.

HYPERÆSTHESIA OF THE RETINAL PERIPHERY. (Ueber (116) Hyperästhesie der peripherischen Retinaabschnitte; zugleich ein Beitrag zur Lehre von den sogennanten katatonen Bewegungen.) PICK, *Monatsschr. f. Psychiatr. u. Neur.*, Bd. 24, Ht. 5, S. 328.

THIS is an extended repetition of an account of a case previously described (see *Review of Neurology and Psychiatry*, 1907), followed by one of a new case of the same nature. The patient suffered from traumatic hysteria, with pronounced retrograde amnesia, etc. Pick traced in him the cause of dislike to going into the streets to a hyperæsthesia of the retinal periphery, together with an uncontrollable impulse to look at anything that suddenly came into the peripheral part of the field. The effect was disturbing, and indeed distressing.

On the basis of these observations Pick makes some remarks on the origin of certain catatonic movements. He urges caution in accepting any explanation given by the patient as to the origin of his impulsive movements, as it is usually secondary and of the nature of a confabulation. He attributes importance in this connection to the hyperexcitability of various sense centres, with the consequent production of hallucinations.

ERNEST JONES.

HEREDITARY NYSTAGMUS. (Ueber "hereditären Nystagmus.") (117) E. MÜLLER, *Deutsche Zeitschr. f. Nervenheilk.*, 1908, Bd. 35, S. 467.

THERE are two forms of hereditary nystagmus. In one, nystagmus forms part of this clinical picture of a hereditary nervous disease such as Friedreich's stain. The other, "idiopathic nystagmus" occurs as an independent family disease, affecting whole families, usually in members of the same sex. Müller describes such a family in which ten cases occurred in four generations. The nystagmus was continuous and of horizontal type, occasionally accompanied by a rotatory movement. No other abnormal signs were present on examination of the nervous system. In both of the members of the family who were examined (uncle and nephew) there was a considerable degree of myopia. No female member of the family had suffered from nystagmus.

PURVES STEWART.

PLUMBIC OCULAR NEURITIS IN QUEENSLAND CHILDREN.

(118) J. LOCKHART GIBSON, *Brit. Med. Journ.*, Nov. 14, 1908.

THE author applies the term ocular neuritis because that title includes with the optic nerve the external ocular nerves.

The disease is characterised by the sudden onset, with or without preliminary colic, vomiting and constipation, and with or without severe headache, rigidity of the neck, or retracted head and acute pains at the back of the neck, of paralysis or paresis of one or both external recti, accompanied by optic neuritis or choked disc, and unaccompanied by rise of temperature or by albuminuria, accompanied by the blue line on the gums, produced by the deposit of black sulphide of lead, by the finding of small quantities of lead in the urine, by the fact that the patient has access to recently painted surfaces, or more frequently whose paint has become powdery and easily detachable, this powder being the very soluble carbonate of lead, accompanied further by the fact that the patient bites his or her nails; the exceptions suck their fingers. If in Queensland a child under eight is seen suffering from a recently acquired internal squint, due to paralysis or paresis of one or both external recti, one expects to find double optic neuritis, and finding this the provisional diagnosis is lead neuritis.

The acute cases are almost confined to children between the ages of two and eight. These children are more accustomed to hang about verandah and garden railings than older children. The paint of these railings becomes powdery and easily detached from exposure to the weather, and readily adheres to the hands, especially when warm. The lead is carried to the mouth by the children biting their nails or sucking their fingers.

The total number of cases of plumbism admitted to the hospital for sick children between 1891 and 1908 was 262, of which 67 were ocular cases. Most of the cases of ocular neuritis have been of the acute variety, and they are more likely to be mistaken for basal meningitis than for cerebral tumour.

As a rule there is extreme swelling of the discs. Hæmorrhages are uncommon, and never large; as a rule one external muscle is affected, the external recti on one or both sides; in only one case was the optic neuritis unilateral.

In chronic cases there is a history of defective sight for months, and if the discs are not atrophic, they are pale with blurred edges; the acute cases which do not run a favourable course present ultimately the appearances of more or less complete post-neuritic atrophy. The defective vision in both acute and chronic cases is an all-round diminished acuity, with a concentric narrowing of the fields; as a rule the colour sense is not more reduced relatively than the light sense. A child with vision reduced to fingers at five or six yards will show no central scotoma for white or colour. Treatment has consisted in confinement to bed, dilute sulphuric acid and saline laxatives, injections of pilocarpine continued daily for six weeks; after the first few days potassium iodide, 5 grs. thrice daily, for a child of eight years. In certain cases Dr Gibson has found lumbar puncture a help.

E. M. LITHGOW.

PROGRESSIVE FACIAL HEMIATROPHY. LYMPHOCYTOSIS IN (119) THE CEREBRO-SPINAL FLUID. (Hémiatrophy Fáciale Progressive. Lymphocytose du liquide cephalo-rachidien.)

HENRI CLAUDE et ALBERT SÉZARY, *Presse Méd.*, Dec. 12, 1908, p. 806.

THE authors fully describe a case of progressive facial hemiatrophy occurring in a girl of 20.

There were present hemiatrophy of the tongue, spasms and tremors in the temporal and masseter muscles on the same side as the atrophy of the face; no sensory disturbance beyond a slight hyperæsthesia, no abnormality in the secretory functions, no affection of taste. There was also a well-marked lymphocytosis in the cerebro-spinal fluid, 12-15 lymphocytes being present in each field when examined with a No. 2 eye-piece and a No. 7 objective.

They then discuss the etiology of the disease, mentioning the two theories of its being due to an affection of the superior cervical ganglion or to an interstitial neuritis of the fifth nerve peripheral to the Gasserian ganglion. They draw attention to the fact that there were no sympathetic troubles or neuralgia, and they show that the atrophy of the tongue points to the probability of the hypoglossal nerve being involved in the process. They then suggest that it is the result of a chronic fibrosis of the nerve sheaths which gives rise to the symptoms by slowly compressing the nerves and ganglia. This suggestion is confirmed by the lymphocytosis, which is not due to syphilis or to any intoxication or infection.

In accordance with this theory the case was treated with galvanism, and twelve injections of 2 c.c. of thiosinamine every second day, with an interval of a week before beginning a fresh series. It was hoped this would cause a softening in the fibrous tissue of the peripheral nerve sheaths.

Four months later the patient presented marked improvement, the atrophy was reduced and the face more symmetrical, while the spasms and tremors which had affected the temporal and masseter muscles were greatly reduced. R. W. LANG TODD.

PSYCHIATRY.

TRAUMA AND PSYCHOSES. OBERSTEINER, *Wien. med. Wchnschr.*, (120) No. 4, 1908.

THE author points out that the significance of physical injury in the production of mental derangement has, from being undervalued and regarded as merely of theoretical interest, on account of the Insurance Laws, become recently an eminently practical question. He refers to a paper by Hasche-Klünder (*Arch. f. Psychiat.*, Bd. 44) on a number of atypical psychoses which have developed a number of years after an accident, and points out that accident may produce not only coarse lesions, such as hæmorrhages and destruction of brain substance, but, as Bikeles has shown experimentally, fine disintegration of nerve tissue not only in the brain itself, but also extending as far as the lumbar region of the spinal cord, and not by the manner of secondary degeneration. The author thinks it probable that new methods will show finer changes, perhaps a loosening of the contact of the neurones or a lesion of the finest nerves supplying the intracranial vessels, but that probably in addition to these various lesions there are disturbances of a purely functional nature which may lead to mental deterioration.

The author lays stress upon the significance of predisposition, to which he thinks sufficient attention has not been paid. This may be either a congenital weakness or it may be a pre-existing constitutional disease, either of itself insufficient to produce the nervous deterioration, or one already commencing to act on the central nervous system, but rendered more active and progressive by the injury. He instances in this connection the frequency with which general paralysis becomes apparent after injury, although no one now regards the injury as the sole ætiological factor.

In considering a claim for compensation in such a case, it should be borne in mind that the trauma alone can never be the cause of general paralysis, and that as compared with the other factors, such as syphilis or congenital nervous weakness, it is comparatively unimportant.

Obsteiner refuses to accept Mendel's dictum that a time limit should be fixed between the accident and the appearance of the mental symptoms in order to make good a claim for compensation (see p. 141 of this *Review*). He points out also that a brain injury may create a disposition to the development of disease at a long-distant date, and that there is no definite relation between the severity of the initial symptoms and the subsequent progress, that a mild and apparently slight injury may produce no symptoms at the time, but may gradually run a progressive and fatal course. On the other hand, there may be a good recovery from psychoses after a severe injury. ALEXANDER BRUCE.

INVESTIGATIONS INTO THE BREATHING OF LUNATICS.

(121) **(Untersuchungen über die Atmung der Geisteskranken.)** BORNSTEIN, *Monatsschr. f. Psychiatr. u. Neur.*, Bd. 24, Ht. 5, S. 392 und 433.

THIS is an account of much detailed work on the metabolism of lunatics. The conclusions are as follows:—In most cases of dementia præcox (ten out of twelve) metabolism is reduced; this disturbance is probably general and not confined to any one organ. In epilepsy nothing abnormal was found, except the increase in oxygen absorption that occurs after very severe attacks. Hyperthermia is of two kinds: (*a*) after epileptic attacks it is due to a greater production of heat; (*b*) in general paralysis it is due to disturbed regulation, there being no increased metabolism.

ERNEST JONES.

MENTAL DISORDERS IN SUPRARENAL DISEASE. (Les

(122) **Troubles psychiques dans les Syndromes surrenaux.)** LAIGNEL-LAVASTINE, *Arch. Gén de Méd.*, Nov. 1908.

AFTER dealing with the anatomy and physiology of the suprarenal bodies, the author divides the mental disorders arising from disease of these organs into three classes.

In Addison's disease the characteristic symptoms are apathy, asthenia, and depression. These are brought about by an inadequate secretion due to a low arterial tension and want of muscular tone.

In the second group of cases are those whose suprarenal secretion is diminished or faulty. They may present the physical signs of the disease at the time of the onset of the mental disorder, but, on the other hand, these may not appear until later.

In this class are included those suffering from tetanic, epileptic, and myoclonic convulsions, and also those exhibiting delirium, often with marked mental confusion and hallucinations.

The author discusses three possible theories as to the causation of the mental affections. The first, that of a reflex origin, he at once dismisses. The theory of suprarenal intoxication or inadequate secretion is the one held by Laignel-Lavastine, and in support of this he states that many cases have benefited by the administration of suprarenal extract.

The third class of cases are those suffering from arteriosclerosis. Josué has stated that he believes there is a form of arterial degeneration of a suprarenal origin, and that it is possible to distinguish this from other forms of the same disease. This change taking place in the brain may produce symptoms of mental disease.

Lastly, the writer holds that in young people a faulty secretion disturbs development, and brings about infantilism and puerilism.

R. DODS BROWN.

LIFE OF THE DEGENERATE. (La Mala Vida.) JOSÉ INGEGNIEROS, *Arch. de Psiq. y Criminol.*, Sept.-Oct. 1908.
(123)

A SOMEWHAT unusual course has been followed by Professor Ingegnieros in publishing as a separate article his prologue to a book by Dr Eusebio Gómez, entitled "La Mala Vida en Buenos Aires." In this article Professor Ingegnieros sketches the broad outlines of Dr Gómez' book, at the same time enunciating in broad and philosophic fashion the general principles on which are founded his own well-known opinions on the nature and origin of criminal conduct. Professor Ingegnieros quotes with approval Dr Gómez' description of evil (including criminal) conduct as due to the "proved incapacity for adapting conduct to the conditions which, in all collective humanity, limit the struggle for existence." Viewing man and human conduct from this biological standpoint, and regarding juridical concepts as the reflection of sociological restrictions, having consequently only a relative and no absolute value—the lack of finality in these processes excluding the existence of any aprioristic moral principles—it results, he says, that the social activity of man, *i.e.* his conduct, is the sum of his necessities; and the consciousness of these, when submitted to a rigorous determinism, is the ineludible motive of all action, individual or collective. Good and evil, virtue and vice, probity and crime are thus ephemeral and provisional concepts, which in the course of evolution become changed according to the biological exigencies of the species. Any action is therefore never honest or criminal in itself, but only in relation to the *milieu* in which it is produced. Upon this basis Professor Ingegnieros briefly discusses the varieties of actions which fall within the category of criminal conduct, and, in conclusion, refers to qualities, frequently encountered in marked degree amongst criminals, which are of positive benefit to the race. The main point, however, brought out by the author is that judicial procedure as yet fails to recognise the purely relative character of the ethico-legal concepts on which it is founded.

R. CUNYNGHAM BROWN.

INSANE DELINQUENTS AND THEIR TREATMENT IN THE (124) ARGENTINE. (Los Alienados Delincuentes y su Tratamiento en la República Argentina.) HELVIC FERNÁNDEZ, *Arch. de Psiq. Crimin. y Ciencias Afines*, Sept.-Oct. 1908.

DR FERNÁNDEZ, the Medical Director of the department for the criminal insane at the *Hospicio de la Mercedes*, which section or department is the first of its kind in South America, gives in this paper, firstly, a brief account of the development in Europe and America of the separate treatment of the criminal insane, and, secondly, describes the construction of the special pavilion at the Asylum of Mercedes. Maintaining that the term "insane delinquent" is absurd and self contradictory—insanity excluding responsibility and consequently delinquency — the author is opposed to the administrative separation of criminal from ordinary insane, and stigmatises as "detestable from the point of view of psychiatry" the provision for insane criminals in annexes to prisons, as at Perth, Berlin, Breslau, and elsewhere. For obvious humanitarian, therapeutic, and economic reasons, he contends, "the insane called criminal" ought to be treated only in asylums, or in special departments of these institutions, and in particular because such an arrangement permits of the easy transference of the insane no longer dangerous to the wards of the ordinary asylum, and *vice versa*. The pavilion, opened in 1898, over which the author presides, appears to have no resemblance to a penitentiary, and to be as well appointed from the point of view of treatment as the asylum itself. Dr Fernández, however, omits any reference to cost of erection and maintenance, proportion to patients and duties of the staff, or the results obtained.

R. CUNYNGHAM BROWN.

PSYCHIATRIC DOCUMENTS. (Documentos psiquiátricos. Poema (125) de la Pantera.) *Archiv. de Psiq. y Crimin. y Sciencias afines*, Sept.-Oct. 1908.

UNDER the title of "The Poem of the Panther" the editors of the *Archivos de Psiquiatría y Criminología y Sciencias Afines* print a small collection of verses written by a youth of twenty-three years, who at the age of twenty first manifested symptoms of erotomania, which marked the first stages of dementia præcox. The youth, who died in a sanatorium in Buenos Aires, was a passionate admirer of Swinburne, Rachilde, D'Annunzio, and Peladan, and his verses, which, the editors say, do not lack merit, and certainly reveal culture, are interesting as an example of psychiatrical literature. The poems, which describe a night of adultery, show clearly the influence of Swinburne, and in their frankly sensual appeal recall the "Our Lady of Pain," which so greatly fluttered the English literary dovecotes of forty years ago. This, however, and a certain and probably borrowed similarity of theme are the only points which suggest comparison, for the verses are so chaotically incoherent in expression, broken in rhythm, and contain so frequent repetitions of phrase that they disclose, even without the ineluctable hold of perverse sexual imaginings, the existence of an already disordered mind. These defects, however, may make the collection of interest and value to the student of art in the insane. R. CUNYNGHAM BROWN.

DEMENTIA CHOREO-ASTHENICA WITH JUVENILE KNOTTY (126) HYPERPLASIA OF THE LIVER. (Dementia choreo-asthenica mit juveniler knotiger Hyperplasie der Leber.)

ANTON, *Münch. med. Woch.*, Nov. 17, 1908, p. 2369.

THE author considers this case one of syphilitic juvenile cerebral disease. The patient was a girl of 14, who had always been somewhat weak. Some years previously she had begun to show difficulty in articulation, with choreic movements of the limbs, and was easily tired. She became progressively weaker, her speech more and more indistinct, and saliva began to dribble from her mouth. The involuntary movements were coupled with inco-ordination, and both slowly increased. Sugar was present in the urine.

There is no note of the condition of her reflexes. Post-mortem the vessels of the cerebrum were found thickened; there was softening in the white matter of the left frontal lobe; the lenticular nucleus was softened almost symmetrically on the two sides; the external capsule was partly involvèd; in the cerebellum were minute points of thinning of the white matter, with small cell infiltration.

The liver was cirrhotic in the anatomical sense, but there was no symptoms of cirrhosis during life. S. A. K. WILSON.

PSYCHOLOGICAL FACTORS IN DEMENTIA PRÆCOX: AN (127) ANALYSIS.

A. A. BRILL, *Journ. of Abnorm. Psychol.*, Oct.-Nov. 1908, Vol. iii., p. 219.

BRILL here gives an account of an interesting case of paranoid dementia he studied in the Zurich clinic. The patient, a man of 39, was an agnostic who in the previous year had suddenly undergone religious conversion in a sudden attack of ecstasy that lasted seventy-two hours. The case was analysed according to the methods introduced by Freud and Jung, and many of the features thus explained on a psychogenetic basis. ERNEST JONES.

CLASSIFICATION OF DELUSIONS OF METAMORPHOSIS.

(128) **(Classification des Délires de Métamorphose.)** INGEGNIEROS, *Arch. de Psiq.*, Sept.-Oct. 1908.

THIS communication, which is a résumé of a special clinical study laid before the Societé de Psychologie of Paris, aims at defining the place which delusions of metamorphosis should occupy in clinical psychology, at summarily indicating some of the principal forms, and at determining the psychological processes which produce these delusions. After an account of delusional states in general and a particular analysis of delusions of metamorphosis, illustrated by typical examples, the author concludes:—

1. That they belong to a system of morbid ideas and not to simple states of mental confusion; that they involve disorder of the effective conditions of the personality of the subject independently of his means of relation with his environment; that they depend much more on disturbances of representation of the self than upon alterations of the feeling of personality, *i.e.* are intellectual rather than emotional disorders; that the disorder is never total, but always partial; and that they do not modify the notion of the identity of the self except by the interpretation of its characters from a special point of view.

2. The systems of morbid ideas constituting delusions of persecution may arise according to three distinct psycho-pathological processes:—(1) By inference (simple and primitive, or following and transforming another delusional system); (2) by the morbid interpretation of immediate preceptions based upon illusions or hallucinations; and (3) by disorders of verbal symbolism, the dissociation of the representation of words being followed by disorders of ideal association.

In both (1) and (2) Professor Ingegnieros assumes that the delusional states come about solely by "inference," or through the invasion of the mind by hallucinations or illusions, with the retention of "a continued reasoning process which passes through all of the phases of normal logical thought." R. CUNYNGHAM BROWN

TREATMENT.

A NEW OPERATIVE METHOD OF TREATMENT FOR CASES OF SPASTIC PARALYSIS BY RESECTION OF POSTERIOR SPINAL ROOTS.

(129) **(Ueber eine neue operative Methode der Behandlung spastischer Lähmungen mittels Resektion hinterer Rückenmarkswurzeln.)** O. FÖRSTER (Breslau), *Zeitschr. f. Orthop. Chir.*, Band xxii., p. 203.

THE rationale of the treatment is as follows:—The inhibitory mechanism controlling one or several spinal segments having been destroyed, the sensory impulses from skin articular surfaces, ligaments, and muscles act unchecked on the motor mechanism of the anterior horns, and cause the spasticity of the muscles.

The muscles involved in any movement of a limb or part of a limb are never supplied from one spinal segment alone, but from several adjacent segments. Similarly, the sensation in any part has a multiple segmental connection.

By resection of alternate posterior nerve roots it is possible to cut off many of the sensory impulses, and thus to lessen or remove the spasticity, while preserving sensation and muscular power and co-ordination intact. The writer gives very full notes of two cases treated by this method with eminently satisfactory result, and also briefly describes two other cases.

Case 1 was a boy nine years of age who suffered from congenital spastic paraplegia; he was, moreover, micro-cephalic and imbecile. The child had spastic talipes equinus and marked contractions of both lower limbs. All passive movements were strongly resisted, and voluntary movements present only in very slight degree, and these always accompanied by involuntary movements of arms and head. Child could not stand, and could not turn himself round in bed. The second, third, and fifth lumbar and the second sacral posterior nerve roots on both sides were divided.

Improvement was immediate, and steadily increased, and ten months after operation the child could walk with the aid of a stick, could go up and down stairs, and put on his stockings, boots, and trousers by himself.

No sensory disturbance in the limbs has resulted.

Case 2 was a girl aged ten years, who for seven years had suffered from Potts' disease in the cervical region, and for eighteen months from Potts' paraplegia, which was unimproved by laminectomy in the cervical region, performed eight months before admission. The spastic condition in this case was of extensive degree, the least cutaneous stimulation setting up violent clonic movements.

The third and fifth lumbar and the second sacral posterior roots on the left side, and the third lumbar and first sacral roots on the right side were resected. The result in this case was also satisfactory, though not so good as in Case 1. The troublesome clonic movements immediately disappeared, and voluntary movements could be carried out fairly well, and eleven months after the operation the child, with the aid of crutches, could walk a considerable distance and could climb stairs.

No disturbance of sensation occurred.

Case 3, one of cortical spastic paraplegia, was considerably improved by a similar operation.

Case 4, one of multiple sclerosis, was fatal, the cauda equina being injured during operation, with resultant flaccid paralysis, bed-sores, and septicæmia.

The writer considers the method suitable for all *severe* cases of spastic paralysis of the lower limbs, including cases of multiple sclerosis. For mono- or hemiplegia it might also be of value, though probably no better than other methods of treatment at present employed. D. P. D. WILKIE.

THE SURGICAL TREATMENT OF BASEDOW'S DISEASE. HILDEBRANDT, *Med. Press*, Nov. 4, 1908, p. 497.
(130)

REMOVAL of the poison-producing gland is at present the only certain method of successful treatment of this disease. Of late years the statistics have shown steadily improving figures as the exact extent and technique of the operative procedures have become better defined and the necessity of interfering earlier in the course of the disease appreciated. The well-known immediate after-effects of the operation—an exaggeration of the symptoms of Basedow's Disease—are due to absorption of thyroid secretion, and are only dangerous in advanced cases with marked tachycardia unchanged by several days' rest in bed. In such cases the heart has not sufficient resisting power, and operation should be refused. Operation is recommended in acute cases in which the thyroid is outwardly quite normal. In ordinary cases, if medical treatment yields no improvement in the course of a month, operation should be undertaken. Local anæsthesia is always to be employed. Partial strumectomy is the operation most in use, that half of the gland which shows the greater vascularisation (not necessarily the larger) being removed. If this is found not to be sufficient, or if recurrence takes place, a second operation is carried out for the ligature of the arteries of the other side or even removal of more gland tissue. Careful after-treatment is very important, and it is to be remembered that improvement may be slow, months or even years elapsing before the poison is eliminated from the system.

HENRY J. DUNBAR.

NOTES ON THE THERAPEUTIC AND PHYSIOLOGICAL ACTION OF BILIARY EXTRACT IN EXOPHTHALMIC GOITRE.
(131)

(Note sur l'action thérapeutique et physiologique de l'extrait biliare dans le goitre exophthalmique.) REVILLET, *Lyon Méd.*, Nov. 15, 1908.

THE author describes the treatment of two cases of exophthalmic goitre with an extract made from biliary secretion. He was led to try this because in simple catarrhal jaundice there is often a slowing of the heart even to 30-40 beats per minute, and because he had already successfully used it in the treatment of tachycardia in pulmonary tubercle.

The extract which he used is sold under the name of paratoxin, and is made by Gérard & Lemaine, of Lille. He began with injections of 2 c.c. twice a day. After three weeks he reduced this to once a day, then he gave one injection every two days, and finally 6 pillules per day.

The cases were married women, one 30, the other 35 years old. In both it had good effects on the tachycardia, the cough, and the general condition. After being given for ten days, the number of heart beats was reduced from 130 to 100 in one case, and from 200 to 120 in the other. They became regular, the arterial tension higher, and the pulsations, which had previously been visible in the neck, disappeared. One patient gained 5½ lbs. in weight in four months, the other 9½ lbs. in two months. The tremblings were greatly reduced, and the patients became much less excitable.

The treatment must be persisted in, otherwise the symptoms reappear.

The author, after discussing how the biliary extract acts, concludes that it directly affects the cardiac ganglia. He also lays stress on the fact that it gives rise to no ill effects.

R. W. LANG TODD.

REGIONAL ANÆSTHESIA BY MEANS OF RACHISTOVAINISATION.

(132) AVRAMESCO, *Rev. Neur.*, Oct. 30, 1908, p. 1090.

(1) BY rachistovainisation only the nerve roots are anæsthetised, not the cord itself.

(2) To anæsthetise any particular area of the body by this means it is necessary to inject the stovaine at the level of the roots supplying the area to be operated on.

For the genitalia, perineum, and anus, inject between the fourth and fifth lumbar vertebræ; for the inguinal regions and the lower extremities, between the first and second lumbar; for the abdomen below the umbilicus, between the ninth and tenth dorsal; for the abdomen above the umbilicus, between the sixth and seventh dorsal.

S. A. K. WILSON.

Reviews

THE DIAGNOSIS OF NERVOUS DISEASES. PURVES STEWART, M.A., M.D., F.R.C.P. Second Edition, Revised and Enlarged. London: Edward Arnold, 1908.

THIS excellent little text-book, which appeared two years ago, was noticed in the corresponding volume of this *Review* (1906, p. 868). In this, the second edition, the text has been revised, and a number of illustrations have been added, while two attractive chapters dealing with the disorder of sleep and the general and localising symptom of intracranial tumours have been included.

DREI AUFSÄTZE AUS DEM APRAXIEGEBIET. Neu durchgesehen und mit Zusätzenversehen von Prof. H. LIEPMANN. Berlin: S. Karger, 1908, pp. 80.

IN this brochure Professor Liepmann has reprinted three of his articles bearing on apraxia which have already appeared in certain German medical journals. Reference to their contents will be found in a paper on apraxia by the reviewer in *Brain*, 1908. The additions consist, *inter alia*, of a fuller account of the case Ochs, which is abstracted in this *Review* (February 1909, p. 116).

The first contribution describes various methods of examining patients suffering from mental disease, with especial reference to the detection of apraxia in any of its forms. The second bears witness to the importance (in right-handed subjects) of the left hemisphere in controlling the movements of both sides of the body, more particularly when these movements are complex. An addition to this paper is to the following effect. It has often been noticed that patients are apraxic for certain movements, *i.e.* are unable to perform certain movements relating to the use of objects, so long as they do not have the objects in their hands; once they see and feel them, they can use them properly. This is especially the case with the right hemisphere, *i.e.* with the patient's left hand. In this respect the right hemisphere is much inferior to the left. Now the motor act of speech is a movement without the object; thus the superiority of the left hemisphere over the right becomes a question of its superiority for the performance of movements, without the actual objects, purely from memory.

The third paper is on the function of the corpus callosum, and contains a discussion on the relation of aphasia and apraxia to the "intelligence."

S. A. K. WILSON.

DER UNFALL IN DER ÄTIOLOGIE DER NERVENKRANKHEITEN. KURT MENDEL. Berlin: S. Karger. 1908.

IN this interesting work Mendel gives a careful and thorough consideration of the relation between accident and the following diseases: general paralysis, brain tumour, brain abscess, "late apoplexy," "late meningitis," tabes, disseminated sclerosis, syringomyelia, myelitis, amyotrophic lateral sclerosis, progressive muscular atrophy, progressive muscular dystrophy, neuritis, paralysis agitans, exophthalmic goitre, acromegaly and epilepsy. He discusses the question of trauma being only one of the responsible factors, and the difficulty that thus arises of determining the exact relation between the accident and the disease, especially as we have no clear guidance as yet in many cases from morbid anatomy or from experiment. He lays down certain conditions, which, in his opinion, must be fulfilled in order to determine a traumatic origin: It must be shown (1) that the injured person was in full health until the day of the accident; (2) that there was no etiological factor other than the injury; (3) that there is a clear time connection between the onset of the disease and the date of accident, (this interval of time must neither exceed a certain limit, nor must the morbid picture be too fully developed within a very short time after the injury); (4) that the accident itself was of a certain degree of severity, and not merely a slight peripheral lesion.

While science demands the fulfilment of such criteria, it is in practice necessary merely to determine whether the injury was one of several factors which produce or aggravate the trouble. Mendel comes to the following conclusions:—

1. Any accident, especially when associated with long confinement to bed, anxiety, etc., may aggravate an already existing nervous disease, may protract its course, or may produce a reawakening of a quiescent disease; whether from a *direct* injury, or an *indirect* effect on the whole organism, or by rendering the part injured less capable of resisting the morbid process.

2. It may create a *locus minoris resistentiæ*, at which other external effects will produce disease more easily than in normal conditions.

3. Or it may, in an organism in which a site of lessened resistance has been created by congenital or acquired disposition, cause development of disease to which there is predisposition.

He also concludes that probably: (*a*) The following diseases cannot be purely traumatic in origin; there must be pre-existing disposition, the trauma being merely the exciting cause, and not the direct one: general paralysis, tabes, disseminated sclerosis, syringomyelia, amyotrophic lateral sclerosis, progressive muscular atrophy, progressive muscular dystrophy, paralysis agitans, exophthalmic goitre, acromegaly.

(*b*) Polyneuritis and brain abscess may be directly caused by an accident, if associated with septic infection.

(*c*) The following diseases may be purely traumatic in origin: apoplexy, meningitis, myelitis, epilepsy. ALEXANDER BRUCE.

DIE KRANKHAFTEN ERSCHEINUNGEN DES GESCHLECHTSSINNES. GEORG MERZBACH. Vienna and Leipzig: Alfred Hölder, 1909, pp. 470.

It has to be said for this work, what cannot always be said of books treating of the subject, that there is a very evident, if not successful, attempt to handle scientifically the unsavoury mass of clinical details with which it necessarily deals. Thus the morbid manifestations of the sexual instinct are classed under the main headings of (*a*) quantitative and (*b*) qualitative anomalies. These, again, are further detailed as follows:—(1) Peripheral nervous affections, including sensory, secretory and motor affections; (2) spinal neuroses; (3) cerebral neuroses, including paradoxical (unusual or unnatural) manifestations of the instinct, anæsthesia, hyperæsthesia and paræsthesia of the normal sexual feelings.

Beyond the inclusion of a chapter on the diagnosis and treatment of homo-sexuality, in which the pyscho-analytic therapy of Freud and Sadger is not too favourably criticised, there is not much of a new or novel nature in the book, which is largely a compilation of the views of many of the leading writers on the subject. On the other hand, within a comparatively small compass everything of importance to the scientific reader can be found. An extensive bibliography and an excellent index are appended.

JOHN MACPHERSON.

ÜBER FAMILIENMORD DURCH GEISTESKRANKE. P. NÄCKE. Halle: Carl Marhold, 1908, pp. 140.

THIS is a very commendable and useful study of a subject which has, both on the part of medical men and sociologists, received too little attention.

As the result of prolonged study and an examination of numerous cases, which are detailed tabularly in an appendix and referred to in the text, the author shows that those startling and tragic family murders and suicides so commonly reported in newspapers are, in the majority of instances, the result of insanity in the perpetrators of them. There are, we are told, complete and incomplete murders. In the former, where all the members perish, the author is either sane or apparently sane; in the latter, where the deed is incompletely performed, the author is usually insane. In the first case, also, the murderer usually commits suicide. Most of these tragedies take place in the spring of the year, but it is impossible to say whether men or women are more frequently the murderers.

The completed murders are twice as numerous as the attempts. In the great majority of instances the victims are, in the case of men, their wives, and in the case of women their children, especially the younger children. Men generally use sharp or blunt instruments for striking blows, or firearms or stabbing weapons; women adopt either the knife or hanging to effect their purpose.

With regard to motives for the crime, they are, we are informed, by no means always easy to ascertain. Jealousy cannot often be set down as a cause, and in the case of the murder of young infants it must of course be ruled out. Very often the straitened circumstances and depression following alcoholic indulgence is the cause. Chronic indulgence in alcohol in the case of men is undoubtedly a cause, as is also paranoia and epilepsy; in the case of women melancholia, paranoia, and dementia præcox have been known to exist. Again, a hereditary tendency to insanity or the neuroses was found in 75 per cent. of the men and 95 per cent. of the women—a much higher incidence than in other forms of mental disease or other forms of congenital mental defect. It would therefore appear that "family murder" is a distinct form of mental degeneracy; it would also appear to form a close link of connection between crime and insanity. As to prophylaxis, much, it is said, can be done by the family physician who is alive to the symptoms of mental degeneracy and insanity, but in this respect, as in others, a great deal remains to be done.

As a special monograph embodying great research and careful analysis this is an admirable little book, not so much for the value of its teaching, which is by no means insignificant, but as showing what may and can be accomplished by workers who devote their energies to limited and new regions of research. Too much is lost because scientists and clinicians are unwilling to stoop to the investigation of humble and common subjects such as this.

JOHN MACPHERSON.

VORSCHLÄGE FÜR DIE AUSGESTALTUNG DER IRRENFÜRSORGE UND FÜR DIE ORGANISATION DER IRRENANSTALTEN. (Unter besonderer Berücksichtigung der bayerischen Verhältnisse.) G. KOLB (of Kutzenberg). Halle a. S.: Carl Marhold, 1908, pp. 45.

THIS communication has special reference to the care of the insane in Bavaria, and the author outlines the scheme of administration and medical regulation which he considers would give to the insane and the mentally defective the most efficient care, and at the same time to the physician the most suitable conditions for efficient work. The author considers not only the care of patients in hospitals for the insane, but also those other forms of care through which the patient escapes to a large extent the dulling effect of a routine asylum life. He recommends hospitals of 500 or 600 beds rather than large institutions. The grounds on which he does so are not economical considerations but those of medical efficiency. "Our aim must be not so much to create institutions of the greatest structural perfection, with the most advanced technical arrangements, and with the highest hygienic refinements; contented patients, a contented personnel, satisfactory hygienic conditions, the quickest recovery of recoverable psychoses, avoidance of the products of institution life and preservation of the wage-earning capacity of the patient, and the possibility of an early discharge from the rather narrow institution life in the case of the incurable psychoses, removal of the prevalent distrust of hospitals for the insane, satisfactory conditions of promotion for the medical officers, and, above all, a satisfactory solution of the whole question of the care of the insane, including the congenital and acquired chronic defect conditions, and the alcoholics—all this will be attained more quickly and more efficiently if we return as a rule to cheap institutions for 500 or 600."

Among other plans the author suggests a central bureau which would act as a medical clearing-house for all the hospitals of the insane. C. MACFIE CAMPBELL.

BEITRÄGE ZUR PATHOLOGIE DES STOFFWECHSELS BEI PYSCHOSEN. ERSTER TEIL: DIE PROGRESSIVE PARALYSE.

M. KAUFFMAN (of Halle). Jena: Gustav Fischer, 1908, pp. 188.

IN this book the author presents a variety of observations on the metabolism of cases of general paralysis, without, however, outlining at the beginning the principles which guided his observations and without summing up at the end the results of his studies. The material is presented in a rather unsystematic manner, and in some cases the result of a single experiment is given without any attempt being made to control the result. The author gives no index, and its absence is a serious drawback in a book which begins with studies on a case of polyphagia and ends with observations on the pathology of ideas of greatness: in the interval the author has discussed the condition of the nitrogen metabolism, temperature variations, the constitution of the blood and cerebro-spinal fluid.

With regard to the cerebro-spinal fluid the author gives results which are at variance with the experience of most other authors; he has observed in hebephrenics, where syphilis could certainly be excluded, marked lymphocytosis in several cases; he lays considerable stress on the amount of fluid present and does not hesitate to remove a considerable amount. This may account for the fact that in his experience paralytic and epileptic attacks have often followed on lumbar puncture. In one case, which he quotes, the "small amount" (!) of 29 c.cm. was removed: five hours later the patient had a paralytic attack. It is unfortunate that a book which represents so much work should contain the results in a form which renders them exceedingly difficult of utilisation. C. MACFIE CAMPBELL.

ZUR KLINIK DER DEMENTIA PRAECOX. Dr WIEG-WICKENTHAL. Halle: Carl Marhold, 1908, pp. 121, M. 3.

IN this monograph the author endeavours not so much to give exhaustive descriptions of the various clinical pictures met with in dementia præcox as to bring cases of this disorder into various groups according to symptom-picture and course. The material which he has used consists mainly of the cases received in his service during the last four years, and also of terminal conditions from an earlier period. In the first 100 pages the symptomatology is discussed, and twenty-one cases are reported in considerable detail.

The features common to all the cases are the primary disorder of the will, causing the peculiar inhibitions and distorted activity of the patients, and a characteristic want of harmony between thought and emotion, while memory and grasp are relatively intact. After a short description of the general symptomatology the author proceeds to the discussion of the various groups into which he has classified his cases:—(1) hebephrenias and catatonias (pp. 13-20); (2) cases with hysteriform-neurasthenic onset (pp. 20-50); (3) cases with a depressive-paranoid course (pp. 50-76); (4) cases beginning with marked confusion (pp. 76-88); (5) cases with intermittent course (pp. 88-97); (6) true paranoid cases—"dementia paranoides" (pp. 97-102). The latter part of the book is given up to a review and a discussion of the differential diagnosis, and for this purpose the author divides the material into those cases where the fundamental symptoms—disorder of will, emotional deterioration, defective judgment—are clear, and a second group where the clinical picture is more complicated and where the fundamental symptoms are obscured and the picture approaches that of other functional psychoses.

In the first group come pure cases of hebephrenia and catatonia and cases of dementia simplex; in the second group are found the large number of cases beginning either with a picture of confusion or with the hallucinatory-delusional conditions referred to in the various groups above. The differential diagnosis of dementia præcox with confusional onset from an acute confusional state on the basis of exhaustion (Meynert's Amentia) is difficult and is discussed in detail. In amentia the confusion is primary, there is marked clouding of consciousness, there is greater profusion of hallucinations, and the somatic element in the whole disorder is prominent. In the amentia-like cases of dementia præcox the appearance of confusion is usually due not to a primary associative difficulty but to a disorder of the will and attention; there is not the same clouding of consciousness with dreamy deliria, and the somatic element is less marked. In some cases, however, there may be a primary associative incoherence.

In discussing the differentiation of cases with hysteriform-neurasthenic onset from cases of insanity on the basis of a degenerative constitution, the author emphasizes the importance of not laying too much stress on the individual symptoms such as peculiar actions, stupor, convulsions, etc., but rather on an analysis of the whole personality of the individual and of the setting in which the reactions occur. It is disappointing to find that this excellent advice is so little reflected in the actual records of the author. In only two of the five cases in this group is the analysis from this point of view even approximately adequate; in the first case, a patient of 61, he gives no information as to the first forty years of the patient's life.

The author is a consistent disciple of Kraepelin, and refers to the symptoms as merely the partial expression of a profound general disorder of metabolism, which produces both in the brain and in other organs well-marked organic changes. One would expect that in the case records there would be some good foundation for this statement, but it is nowhere to be found.

The striking absence of certain data in the case records, of the data furnished by the reactions of the individual to the actual difficulties of his life, is explained by the fact that under the influence of the above hypothesis simple facts, ascertainable by direct examination, have been ignored as irrelevant. If psychogenic factors are *a priori* ruled out, then complete records of the intimate life of the patient are not aimed at; the actual records resulting from this attitude naturally contain little which would point to the importance of psychogenic factors in the mental disorder. Whatever be the dynamic value of mental difficulties of adjustment, full case histories force upon us the conviction that the symptomatology in many cases of dementia præcox bears such an obvious relation to the concrete difficulties of actual situations in the patient's life that the latter cannot be considered irrelevant in a discussion of the symptoms and course of the disorder. The formal psychological differentiations of the author are a consistent elaboration of the views of Kraepelin, but the emphasis laid upon these bloodless abstractions to the exclusion of an analysis of the living forces of individual psychology is apt to be a stumbling-block in the way of a full and impartial examination of cases of this mental disorder. C. MACFIE CAMPBELL.

PRISON PSYCHOSES. (Ueber Gefangnispsychosen.) Dr KARL WILMANNS. Halle: Marhold, 1908, M. —25.

IN the beginning of this pamphlet Dr Wilmanns takes up the literature of mental disease in prisoners, and states that the first to consider the question was the prison doctor of Halle—Dr Delbrück—in 1854. Since then, there have been many writers on the subject, two of the most important works hitherto published being "The Ganser Symptom," by Hey, a summary of what had been written, and "The Ganser and Hysterical Stupors," by Räcke. The observations of Sieffert and Bonhoeffer are referred to at length. The author then gives his experience of 277 cases which were observed from April 1891 to December 1906. With one or two exceptions the cases were those of prisoners upon trial. To make a proper diagnosis not only the symptoms must be considered, but also the personality of the patient. In two tables the forms of disease are given (1) as diagnosed at an early stage, (2) as diagnosed at a later period. About four-fifths of the cases belong to the classes of dementia præcox and degenerative insanity. Senile dementia is not noted, and the author has only once observed, in the case of a man of 53 years of age, with a family history of insanity and a personal history of alcoholism, signs of senile decay in combination with the symptom-complex of Ganser. Senile degeneration of the brain is, of course, no good ground for prison insanity, although senile dementia makes rapid progress under the unfavourable conditions of prison life. Alcoholism is represented by one case of alcoholic epilepsy and ten cases of delirium tremens. The apparent rarity of manic depressive insanity in prisoners is pointed out, and Dr Wilmanns states that it is rare to find a healthy criminal develop this form of insanity while in prison. In all cases of criminal insanity there is a unanimous opinion that prevention or cure can be effected by removal of the patient from the prison, and that the peculiar characteristics of the disease are due to imprisonment.

In a plan which shows the relations between the beginning of the criminal action, the mental disturbance, and the imprisonment of 38 cases of dementia præcox, the beginning of violation of the law was noticed at as early an age as twelve years, was commonest from sixteen to seventeen, and then fell quickly. Mental disease began at eighteen or nineteen, and reached its height at twenty-eight to thirty years of age. Only four or five of the patients were mentally affected at the beginning of their criminal career; the remainder became ill while in prison, and generally after years of imprisonment. Although it is probable that imprisonment induces a dementia præcox that in other circumstances might have been avoided, it is the fact that in most cases, especially when the disease is at an advanced stage, neither recovery nor improvement takes place on liberation from prison.

Twenty-two cases of epileptic insanity were observed; eleven of these were degenerate forms, and eleven genuine epileptics.

The mental and bodily stress which prisoners undergo, especially during their trial, are productive of acute psychoses, shown in homicidal reactions and periods of acute excitement. Such conditions generally arise in patients who are already somewhat weak-minded. In other cases hallucinations are marked, especially of sight and hearing, and Ganser's dazed condition is frequent.

The author points out the difficulty of distinguishing feigned from real insanity—even some of the Ganser symptoms may be simulated.

Another mental condition that may occur in prison is auto-hypnotism. Several cases are described, *e.g.*, that of an habitual criminal who believed himself to be hypnotised while in prison.

The author is of opinion that prison life is disadvantageous, especially to certain natures—dreamers, hypochondriacs, etc.

With respect to paranoia, the most frequent form in prison is litigation mania. In this, Kern and Kraepelin agree with the author.

Fixed delusional insanity may be distinguished from the prison form in that the latter may be cured by a change of surroundings.

Dr Wilmanns is of opinion that the forms of insanity outside and inside prisons are clinically equivalent, but that the former are developments of a greater degree of degeneration than the latter, and are the result of a removable exciting cause.

HAMILTON C. MARR.

THE RELATION OF THE MENTAL INVENTORY TO RATIONAL AND RESPONSIBLE CONDUCT. (Ueber das Verhaltnis des geistigen Inventars zur Zurechnungs- und Geschaftsfahigkeit.)

Dr JOSEF BERZE. Halle: Marhold, 1908, M. 2.80.

FOLLOWING the advice of Dr Bresler, the author has attempted to make a complete inventory of the mind qualities to be found in different individuals. On such an inventory, he remarks, the legal and medical opinions as to abnormality depend. The literature, on the correct standpoint to take when testing the quality of a person's mind, must be described as a particularly scanty one, the more so when the importance of the subject is considered. The first part of the book enumerates the qualities of the mental inventory, and it is shown how these qualities vary in individuals. In the second part the inventory is tested, and the psychological worth of the results of this testing is demonstrated. The third part deals with pathological diagnosis on the basis of the inventory. After having thus expounded and classified the material which has come under his notice, Dr Berze, in the fourth part, reaches his main subject, viz., the relation of the mental inventory to responsibility and capacity for rational action.

HAMILTON C. MARR.

Obituary Notices

PROFESSOR JOFFROY (1844-1908).

NEUROLOGY and Psychiatry have recently suffered a great loss in the death of one of the most illustrious representatives of the French School, Professor A. Joffroy. He was a pupil of Duchenne (of Boulogne), of Vulpian, and of Charcot, for the traditions of whose teaching he maintained throughout an unbroken loyalty. The influence of the last-named of these teachers remained especially strong with him, and of the brilliant group of Charcot's pupils, which has given to neurology scientists such as Raymond, Brissaud, Ballet, Pierre Marie, Babinski, etc., Joffroy was the eldest. His work was carried out mainly in those wonderful fields of observation, La Salpêtrière and the Asile Sainte-Anne. There will be present to every mind his anatomo-pathological investigations on infantile paralysis, his thesis on cervical hypertrophic pachymeningitis, the description of tabetic club-foot (which bears Joffroy's name), the works on peripheral neuritis, on experimental alcoholism, on pseudo-bulbar paralyses, on the etiology and pathological anatomy of general paralysis.

Joffroy occupied the Chair of Clinical Mental Diseases of the Faculty of Medicine of Paris. He was one of the founders and the first President of the Society of Neurology of Paris, the activity of which was so great and the success so remarkable. Quite recently he helped to found the Society of Psychiatry, of which he was the first President. He was a Member of the Academy of Medicine, Director-Founder of the psychiatric part of the journal *L'Encéphale*, and Director of the *Archives de Médecine Expérimentale.* His professional reputation and his qualities in private life were in no way inferior to his scientific value. He died suddenly, and though this cruel loss has left behind it only grief and regret, the memory of Professor Joffroy will remain as of one of the most estimable characters of a man, a physician, and a scientist. (*Translated.*)

DR ARGYLL ROBERTSON.

Readers of this *Review* will regret to learn of the sudden and unexpected death in India, on the 3rd of January, of the distinguished Edinburgh ophthalmic surgeon, Dr Argyll Robertson, whose name has a world-wide association with the loss of the light reflex of the pupil in locomotor ataxia and other nervous diseases. The paper on the eye symptoms in spinal diseases, published by him in the *Edinburgh Medical Journal* in 1869-70, was the first to draw general attention to the phenomenon which bears his name. He retained throughout his whole life a special interest in the association of his speciality with neurology.

BOOKS AND PAMPHLETS RECEIVED.

Theodor Escherich. "Die Tetanie der Kinder." Alfred Hölder, Wien und Leipzig, 1909, M. 7.20.

Oppenheim und Cassirer. "Der Hirnabszess." Alfred Hölder, Wien und Liepzig, 1909, M. 9.

Paul Émile Lévy. "Neurasthénie et Névroses. Leur Guérison Définitive en Cure Libre." Félix Alcan, Paris, 1909, 4 fr.

Dromard. "La Mimique chez les Aliénés." Félix Alcan, Paris, 1909, 4 fr.

Obersteiner. "Die Sinnestäuschungen." (*Handbuch d. ärtz. Sachverständ.-Tätigkeit*). Braumüller, Wien, 1909.

Obersteiner. "Trauma und Psychose." (*Wien. med. Wchnschr.*, Nr. 40, 1908.)

Marinesco. "La Cellule Nerveuse." (*Encyclop. Scientifique.*) 2 vols. O. Doin et fils, Paris, 1909.

Hartenberg. "Psychologie des Neurasthéniques." 2^{me} éd. Félix Alcan, Paris, 1908, 3 fr. 50 c.

Review
of
Neurology and Psychiatry

Original Articles

A REVIEW OF THE QUESTION OF APHASIA.

By S. A. K. WILSON, M.B., M.R.C.P.,
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(With Plate 3.)

For forty years the literature on the subject of aphasia has been steadily increasing, and the developments of the last two years, provocative as they have been of renewed interest in the question, have served to render the total of contributions nothing short of stupendous. In response to the request of the editor of this *Review*, I have endeavoured to supply a succinct resumé of the present situation in regard to that subject, but the rôle of "vulgarisateur" is no sinecure when it concerns a question which has engaged the minds of so many, from the philosopher seeking an hypothesis to the clinician content to record facts. The study of the disorders of speech offers many sides to the investigator: it interests the anatomist, physiologist, pathologist, and psychologist, and it must be approached from all these sides. Any attempt to dissociate these, to buttress a theory by data derived from the examination of one side only, must inevitably end in failure. From its very nature, the function of speech is highly complex, and its physical and psychical aspects are inextricably bound together. Any theory of speech must be in harmony with the accepted facts of cerebral localisation, must be physiologically feasible and psychologically satisfying.

In view of this complexity there is little cause for wonder at the wide diversity of opinion that has always obtained in regard to aphasia, and if this difference of opinion has borne on the actual facts as discovered by the laborious investigation of a generation, it has borne to an equal extent on the interpretation of these facts. It is well we should impress on ourselves the truth of this, for the recent trenchant criticism of the "classical" theory of aphasia, more particularly by Pierre Marie and his pupils, may perhaps lead us to forget that there never has been anything approaching unanimity of acceptance of this "classical" theory. One need only scan the extraordinary collection of schematic diagrams representing the views of various writers on the question, which have been reproduced by Moutier in his *Thèse*—it was a happy idea to collect them thus—to appreciate the point of the above remark. The nomenclature is as confusing as the schematisation. Lichtheim, a master in the art of theorising, postulated a "centre" for concepts altogether apart from the sensory centres, and starting from this classification Wernicke introduced a still more complicated classification, including real with imaginary speech defects. Yet Bastian, the author of one of the most logical and philosophical contributions to the study of aphasia, says, "after the most careful consideration of the subject, I believe that no cases exist which need for their interpretation the postulation of a separate centre for concepts." There is thus a fundamental difference between these two schemes. The "classical" authors are not unanimous.

But the disagreements concern not merely theoretical considerations, but even matters of fact. Basing his types on his scheme of an ideational or intellectual centre of concepts, Lichtheim described a form known as transcortical motor aphasia, occasioned by an interruption of fibres from his ideational centre to the motor speech centre. Briefly, the chief feature of such a case would be impossibility of spontaneous speech on the part of the patient, with conservation of the power of repeating what is said to him. Some half-dozen cases, apparently of this description, have been reported, but in 1906 Rothmann declared that all were unsatisfactory, and that the sole indubitable instance was the one which he proceeded to narrate ! It is little wonder, perhaps, that Moutier says, "nous laisserons absolument de côté les aphasies transcorticales, dont le schématisme outrancier est pure hypothèse." But the facts are not hypothetical, however little the theory to account for them appeals to Moutier, and only a month or two ago a further excellent instance of the condition was published in a German journal.

It must be obvious to the impartial observer that the over-schematisation of the theorist eager to explain the facts has been instrumental in bringing discredit on the facts themselves. This we cannot but consider unfortunate. We have every reason to examine our cases of aphasia with careful minuteness, and we have every right to endeavour to frame an hypothesis to account for the facts, but we must be sure of them first. It is the too common tendency, as Hughlings Jackson says, to make divisions where there are no distinctions, which has led to a reaction in favour of simplification.

Nevertheless, by the consensus of medical opinion it has been usual, for purposes of teaching perhaps as much as for any other, to speak of four "centres," situated, in the majority of individuals, in the left hemisphere. There are two receptive and two executive centres. Of the former, one is a centre where the auditory memory-images of words are stored, situated in the upper temporal convolution chiefly, towards its posterior end; the other is for the visual memory-images of words, and it occupies the neighbourhood of the angular gyrus. Of the latter, one is the centre for motor speech, at the posterior end of the third left frontal convolution, while the other is a centre for the movements of writing, situated above the former. Even in regard to these four centres there has always been difference of opinion, and the existence of the last has been not infrequently denied. It has never been argued that they are represented by circumscribed and isolated cortical areas of fixed distribution, but the necessity of accepting some such scheme has been patent to all who have made a study of the problems of aphasia, and the recognition of these centres has seemed a legitimate deduction from the great mass of clinical and pathological evidence.

The two contrasted types of motor and sensory aphasia have always appeared to be well differentiated and readily recognisable, though every possible degree of transition between the two has been recorded. "L'aphasique de Broca est un silencieux: l'aphasique de Wernicke est un bavard." The motor aphasic is practically dumb: he can articulate only a few words or syllables, whereas the sensory aphasic pours out a medley of meaningless words, phrases, sentences, but fails to understand what he hears or reads.

It is unnecessary at this point to dwell longer on the "classical" position, so called, for as we proceed to criticise the newer views we shall have opportunity to restate and amplify the former. We must, however, beware of approaching the question of aphasia asymmetrically. By thinking in centres we may be apt to lose sight of the psychical states of which the centres are but the physical bases. When we speak, there are three things to be considered : speech, articulation, and voice. Voice is a function more particularly of the larynx, articulation is a function of that mechanism by which the muscles of the lips, tongue, and throat are called into action, and speech is a complex of psychical states which have their counterpart in certain cerebral nervous arrangements. In every speech function there must be participation of the intellect ; speech is but a specialised part of the intellect. And therefore there can be no disturbance of the function of speech, however slight, in which there is not a disturbance of certain psychical states. In other words, every disturbance of speech is an intellectual disturbance. The importance of keeping this fact in mind will be recognised later.

In 1906 Professor Pierre Marie of Paris commenced the publication of a series of communications on the subject of aphasia which have attracted widespread attention, no less by reason of the eminent position which their distinguished author holds in the world of neurology than on account of the somewhat startling nature of their contents. His views have received further support by the appearance of Moutier's *Thèse* on Broca's aphasia, published under the ægis and with the imprimatur of Marie.

It is manifestly impossible within the limits of an article for this *Review* to give more than the merest outline of these new views. Already they have been subjected to masterly criticism at the hands of Déjérine, Liepmann, and others. What I propose to do is to indicate in the briefest manner, and on general principles, in what way they appear to me to be insufficient. The idea of reducing the complexities of aphasia to an unequivocal and yet comprehensive scheme, attractive in its simplicity, is admirable, but when it is done at the expense of sweeping away what is accepted and ignoring what is discordant, the effect is less impressive. Within recent years much labour has been spent on re-examination of the question of aphasia, and numerous clinical instances apparently at variance with the accepted schemes have been published. It has remained for Marie and Moutier, however, not merely to simplify, but to destroy, and to affirm their opinions with a dogmatism which familiarity with the complexity of aphasic problems ought surely to have prevented. In their papers we find four points specified as requiring reconsideration, and these we shall examine in turn

1. The Third Left Frontal Convolution does not Play any Rôle in Disturbance of Speech.

Such is the first of the new dogmas. The third left frontal is deposed from its throne; it is shorn of *all* connection with speech. As to the part it does play in cerebral function, however, curiously enough no information is vouchsafed. It is true that Broca's original two cases are unsatisfactory, and that the evidence for the specificity of the lesion causing motor aphasia is slighter than is commonly supposed. Moutier has noted only nineteen cases in the literature in which motor aphasia was found to be associated with a lesion of the third left frontal convolution, and he dismisses them all—rather summarily—as being unconvincing. He has found twenty-seven cases of lesion of that convolution without any aphasia. He has collected fifty-seven cases of motor aphasia ("les descriptions cliniques justifient le diagnostic d'aphasie de Broca porté du vivant du malade") with integrity of the posterior end of Broca's convolution. On the other hand, in all of these fifty-seven there was an obvious lesion in Marie's "lenticular zone." As we cannot proceed further without acquaintance with this lenticular zone, let us see what it is and what is comprised therein.

"Si, sur une section horizontale du cerveau, on mène une ligne transversale du sillon antérieur de l'insula jusqu'au point correspondant du ventricule latéral, et une autre ligne transversale du sillon postérieur de l'insula au point correspondant du ventricule latéral, on circonscrit une region ayant à peu près la figure d'un quadrilatère, et contenant dans son territoire le noyau caudé et le noyau lenticulaire, la capsule externe avec ses differentes parties, et la capsule interne. C'est dans ce territoire, très nettement separé de la troisième circonvolution frontale, que doit siéger une lésion pour determiner l'anarthrie spéciale dont il vient d'être question. C'est ce territoire que j'ai, par raison d'abréviation, désigné sous le nom de zone lenticulaire. J'ai pris soin de faire remarquer que *je ne me trouvais pas encore assez documenté, actuellement, pour indiquer les limites supérieures et inférieures de la tranche cérébrale constituée par la zone lenticulaire.*" (No italics in original.)

This lenticular zone is indicated on the annexed diagram. The horizontal section which Marie calls the "coupe d'élection" is made by drawing the knife horizontally outwards in the plane of the anterior and posterior extremities (under surface) of the corpus callosum as it appears on the mesial aspect of the hemisphere. In this zone, then, or rather in this plane—for the upward and downward limits are not specified, while the anterior and posterior limits are drawn with mathematical regularity—is to be sought, and found, the lesion which produces "anarthria."

This "anarthria," too, needs elucidation. The word is used by Marie in a new and arbitrary way. It is taken to signify impossibility of articulate speech, *not* impossibility of articulation. Anarthria in this sense exists when there is no paralysis whatever of the peripheral speech mechanism. "C'est donc là une anarthrie particulière au milieu des autres anarthries." This must be noted if we are not to become still more confused.

We shall leave the discussion of these statements for a moment in order to note the second dogma, which is an integral part of the new theory.

2. ANY ESSENTIAL DISTINCTION BETWEEN MOTOR AND SENSORY APHASIA IS INADMISSIBLE.

It has always been held that these two types of aphasia, generally speaking, are readily distinguishable; the motor aphasic has the greatest difficulty in expressing his ideas; he may have only a few words, or syllables, but these, as a rule, he articulates well enough; or he may have actual defect in articulation; he shows sometimes a certain transient word deafness; he is frequently agraphic. Any affection of the sensory side of speech which he may exhibit is commonly both slight and fugitive. On the other hand, the sensory aphasic has gross word-deafness or word-blindness, or both, but has no defect of articulation; he can talk *ad infinitum*, however meaningless his speech; as a rule he cannot write.

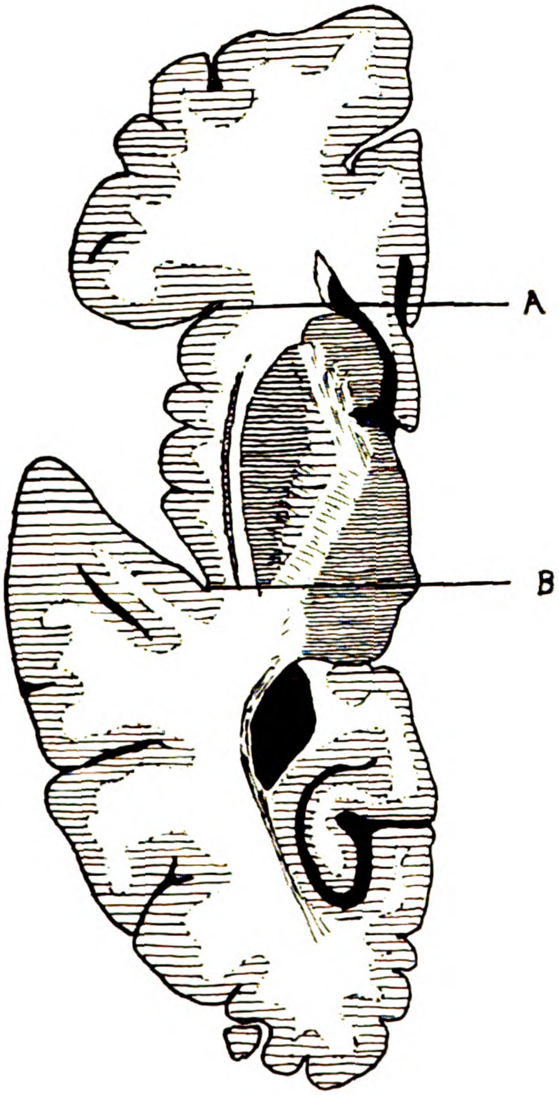

DIAGRAM OF MARIE'S LENTICULAR ZONE

(between lines A and B).

To illustrate Dr S. A. K. Wilson's Paper.

According to Marie the difference between the two types is solely a matter of degree, not of kind. It is impossible clinically to draw any hard and fast line between the two, apart from the trouble of articulation. The final conclusion arrived at may be thus expressed:—

Whenever the clinical picture is one of "anarthria"—*i.e.* pure, or subcortical, motor aphasia—the lesion is in the lenticular zone.

Whenever the motor speech affection is complicated by the symptoms of agraphia, with certain slight difficulty in the comprehension of speech—Broca's aphasia, cortical motor aphasia—there is an extended lesion which involves both the lenticular zone and Wernicke's area, or the fibres coming from it.

Thus Broca's aphasia is simply Wernicke's aphasia plus pure motor aphasia or "anarthria."

A lesion confined to Wernicke's zone produces Wernicke's aphasia.

Let us put these views in another light.

There is only one aphasia, strictly so called: this is an "intrinsic" affection of speech. It is due to impairment of "le langage intérieur," and is known as Wernicke's aphasia, localisable in the temporo-parietal region. Aphasia is thus defined in Moutier's words: "l'aphasie est un trouble de la comprehension et de l'expression des signes normaux du langage, indépendant de la démence et de la paralysie." Aphasia is one and indivisible, but there may be added thereto an affection of articulation, an "extrinsic" phenomenon, in which case we get Broca's aphasia. In *every* case of aphasia we find some defect of intelligence, but in *no* case of "anarthria."

It must be clearly understood that these statements of Marie and Moutier are no mere theoretical opinions, but are deduced on anatomical and pathological grounds from clinical material, the abundance of which only those who have had the good fortune to visit Bicêtre can appreciate.

Criticism of such weighty authority is somewhat perilous. When we are told that the results have been obtained from more than fifty autopsies and clinical cases, we hesitate. Nevertheless, however seductive the simplicity of these views, however praiseworthy the attempt to illuminate complex problems, it seems to me that it is quite impossible to accept the new hypothesis in its entirety, and that it is open to objection on clinical, physiological, pathological, and, above all, on psychological grounds. It was remarked at the outset that any attempt to handle the problems of aphasia from one side alone, or any failure to unite all the sides of the question harmoniously, must vitiate the theory, and already it has been subjected to severe criticism from these different points of view. As we have sketched Marie's restatement of aphasia in so far as it concerns clinical pathology, we shall now proceed to note various points difficult to reconcile with it.

Ladame and von Monakow have published the case of a woman who had a slight apoplexy at the age of forty-five, with transient right hemiplegia, followed by absolute and complete mutism. Up to the time of her death, eleven years later, she was able to write spontaneously and correctly. In that time she only spoke on two or three occasions, saying "yes" and "no" once or twice, once "thanks very much," and once "good-bye, my little one." Thus there was here:

(*a*) Loss of spontaneous or voluntary speech.

(*b*) Inability to repeat words.

(*c*) Inability to read aloud.

On the other hand we find—

(*a*) Complete integrity of "le langage intérieur": no word-deafness or word-blindness.

(*b*) Conservation of writing, voluntary and to dictation.

(*c*) Conservation of the comprehension of words spoken or read: conservation of the power of reading to herself.

At the autopsy an area of disease was found to occupy the foot of the third left frontal convolution and the lower part of the ascending frontal, with the exception of a small section of the operculum covering the insula. The lesion was a hæmorrhagic cyst, with cicatricial thickening of the neuroglial wall, and measurements showed that more of the cortex was destroyed than of the white matter, so that the lesion may be fairly said to be cortical rather than subcortical, although the clinical picture was one of subcortical or pure motor aphasia.

In this case, therefore, we have a most typical instance of Marie's "anarthria," but the primary lesion is completely outside the lenticular zone. Moutier has endeavoured to claim this case in support of his views, but the contention is entirely inadequate. The fact that some secondary degeneration was found in the lenticular zone is of no significance, for these secondary degenerations may correspond to varying and widely separated cerebral localisations. If a secondary lesion in this zone is to be taken to indicate a lesion of the zone, then the expression is perfectly meaningless. " Il ne suffit pas de défigurer une observation pour en contester la valeur " is the final answer of the authors to Moutier's interpretation of it.

Mahaim has published a case of a man of seventy-four, presenting the clinical picture of sensory aphasia in a pronounced degree. His spontaneous speech seemed unending, full of neologisms, of fragments of phrases, a perfect torrent of words. At the autopsy the lesion of Wernicke's area extended forward, so that the posterior four-fifths of the insula and the underlying white matter were destroyed by the primary lesion. The external capsule and the claustrum were gone *in toto.* According to Marie this patient ought to have been dumb, " anarthric," a Broca's aphasic. Indeed, the latter author has been at pains to emphasise the importance of a lesion of the white matter underneath the convolutions of the insula in producing what he calls anarthria. In this case we find a diametrically opposite condition.

Mahaim has reported a further case, of total aphasia, in which he expected at the autopsy to discover a double lesion, one in Wernicke's zone and the other in the neighbourhood of the third left frontal. The former was at once apparent, but the latter was found to be very small, and to be placed in the second frontal. To the naked eye the third frontal appeared remarkably intact, but examination in series revealed the interesting fact that the whole of the fibres coming from the third frontal were involved and destroyed by a prolongation of the focus of softening underneath the cortex of that convolution.

The instructiveness of this case is in the lesson it teaches : only a complete examination in series of a local lesion can be of any scientific value in the determination of the areas associated with troubles of speech. Yet the distinguished neurologist whose work has been appreciated the world over has been content on several recent occasions to argue from the state of a brain exposed by his *coupe d'élection*, and examined in this simple way alone, that the third left frontal is intact, when a detailed investigation might reveal something very different. Not only is the method unscientific, but the results are unfortunate, and the value of the investigation is so diminished that the conclusions become little more than assertions.

Personally, Moutier has recorded one case in his *Thèse* of "anarthria" in which the third left frontal was intact, studied by the method of serial sections, and three cases of destruction of that area without accompanying aphasia. The importance of these no-one desires to minimise. But, on the other hand, he has found six cases of Broca's aphasia or "anarthria," in which *both* the third left frontal and the lenticular zone were implicated, but these he sets aside as being useless for his purpose. Since he holds a lesion of the third left frontal of no significance, he ignores the very cases in which he finds it. Instead of endeavouring to interpret their possible teaching, he refuses to consider them, because, forsooth, the "lenticular zone" is involved as well, however slightly.

Déjérine has published two cases of Broca's aphasia in which the primary lesion was in the third left frontal convolution, in which, further, the posterior convolution of the insula, the three posterior digitations of the anterior convolution of the insula, the retro-insular area, the external capsule, the basal ganglia, the internal capsule and Wernicke's region, were all intact.

But enough of these pathological cases. No one forgets the occasional cases which render it difficult to accept the "third left frontal" view unconditionally. But in its place we find another area proposed with confidence and supported with a dogmatism at least equal to that of the most ardent supporters of the classical view. One might have thought the originators of it would have known better. When *absolute* statements are made as to the facts, and *absolute* conclusions, permitting of no exception, are deduced therefrom, it suffices to produce but one case to demonstrate the contrary, and the whole edifice of facts and conclusions falls to the ground.

It appears to me that the value of these reinvestigations of the subject of aphasia is discounted by the absoluteness of the conclusions, the arbitrariness of the divisions, and the persistence with which facts that do not harmonise with these views are ignored. In the first volume of "Brain" (1879), Dr Hughlings Jackson quotes with approval the remark of Curnow: "The tendency to appear exact by disregarding the complexity of the factors is the old failing in our medical history." With no injustice can this be applied to the recent "revision" of aphasia.

What can the physiologist say of the lenticular zone? Never was a cerebral area delimited in a more artificial way. It is more schematic than many of the schemes it is supposed to displace, for all that it is claimed to rest on a secure pathological basis. Enclosed within its somewhat vague boundaries—for strictly speaking it exists only in a certain plane as yet—are included the convolutions of the island of Reil, the external capsule, the claustrum, the lenticular nucleus, the caudate nucleus, the internal capsule, and a great part of the optic thalamus! In other words, it consists of the middle third of the left hemisphere, and Mahaim makes the pertinent remark that since it includes practically all the cortical projection fibres, there is every chance that in each and every case of aphasia some lesion might be noted in this new zone. The advances made in our knowledge of localisation in this region, by experimental and other methods, are absoluely ignored. There is not even any effort made to distinguish between lenticular lesions and lenticular zone lesions. Mahaim further draws attention to the fact that the *coupe d'élection* is too low for the condition of the third frontal convolution to be studied: it passes through the head of the convolution, so that nothing is learnt thereby of the state of the posterior end, or of the arcuate fibres passing over the insula.

Clinically, the strictures which have been passed on Marie's theory by Liepmann, Déjérine and others are warrantable and indeed inevitable. According to the new definition, *every* patient with Broca's aphasia has some difficulty in the comprehension of speech. The sole difference between motor and sensory aphasia is that there is in the former an added feature in the shape of "anarthria." However transient, however insignificant the word-deafness, according to Marie and Moutier there is no Broca's aphasia without it.

Here, again, it suffices to record a case of pure motor aphasia and agraphia, without any sensory aphasia whatever—such as a recent one of Liepmann's—to demonstrate the insufficiency of the theory of the unification of aphasia, if the expression may be allowed. It is clear, however, that many cases have been claimed in support of that theory which are really common cases of total aphasia—a regrettable confusion. Of the 57 cases already quoted from Moutier, there is little doubt that a proportion are certainly to be included in this category. That such cases are called motor aphasics is due to the frequently overlooked fact that their word-deafness is transitory, a point emphasised by Wernicke as long ago as 1874. Further, a patient may be of very limited speech because of paraphasia. Not all word-dumb patients are motor aphasics, although they are claimed as such by the adherents of the new theory. The question has often been raised whether patients with complete sensory aphasia may not be speechless. One need only refer to the admirable way in which this matter is discussed by Bastian, who collected fifteen cases of combined lesions in the left auditory and visual word centres, in six of which there was more or less complete speechlessness. When, therefore, a lesion in the temporal lobe is discovered, it is often quite sufficient to account for the apparent motor aphasia, and there is no need to invoke another cause. In bilateral lesions of the temporal lobes a patient becomes absolutely word-dumb, but he is not suffering from Broca's aphasia.

In this connection we come to the third criticism of Moutier, which is, that

3. Pure or Subcortical Aphasias do not Exist.

The unlikelihood of a lesion in the cortex affecting cells but not fibres is, of course, very great: it may, indeed, be said to constitute an anatomical impossibility. Hence *à priori* we should not expect to be able to distinguish between a cortical and a subcortical lesion, for projection and association fibres must alike be involved in both. Small local lesions in the brain, wherever they may be, are always rare, and we need not be astonished at the rarity of isolated aphasic symptoms, such as pure word-deafness or word-blindness. It must always be so. Marie declares he has never seen a case of pure word-deafness, and considers it "un simple mythe." The cases of the condition which have been published all contain some blemish, it seems, the most frequent being the failure to test for defect in the function of the labyrinth. Indeed, Marie absolutely and categorically denies the existence of the "centres" of the classical authors. He denies that a lesion in the first left temporal convolution causes word-deafness, and so on. When one thinks of the years of work that have led to the establishment of these cerebral localisations, it seems somewhat curious to explain them away so readily, and when the proposal is made to replace them, at least the two receptive centres, by an "intellectual centre"—for such it is—one cannot refrain from surprise. I do not propose to quote instances of word-deafness and word-blindness in association with lesions in the upper temporal convolution and angular gyrus. It is rendered unnecessary in view of the attitude which reduces cerebral localisation to a figure of speech. We cannot, in a brief review, dwell further on these points, but must pass on to the last matter in dispute.

4. In Every Case of Aphasia there is Intellectual Impairment.

In the words of Moutier, "il existe chez l'aphasique un déficit intellectuel général et un déficit intellectuel du langage." That there may be no misapprehension of what Moutier affirms, I shall continue to quote his own words. This defect of intelligence, the nature of which we shall learn immediately, occurs solely in cases of aphasia, in Marie's sense, *i.e.* cases where the lesion is in Wernicke's zone. "Il ne faut pas oublier que chez l'anarthrique l'intelligence est intact." "Nous ne saurions trop répéter que l'affaiblissement intellectuel manque dans l'anarthrie, et qu'il peut varier de facon illimitée dans l'aphasie." The patient may know something or other, but may not be able to say it, "ce qui naturellement est de régle chez l'anarthrique, dont l'intelligence est intacte." And so on. There can be no misapprehension after such statements, and we are therefore asked to believe that in cases of aphasia, defect of intelligence only occurs, and always occurs, in lesions behind an imaginary line drawn from the posterior end of the island of Reil transversely to the lateral ventricle!

Let us go a little further.

"Les troubles intellectuels sont constants dans l'aphasie de Broca. . . . Il doit être entendu une fois pour toutes que tous ces troubles sont variables à l'infini, et que suivant les dégrès l'intelligence peut être à peu près totalement diminuée, à peu près totalement intacte : *il y a là simplement* [sic] *une question d'étendue de la lésion dans la zone de Wernicke.*" "Il est à remarquer que l'intensité des troubles psychiques produits par les lésions de la zone de Wernicke est *très notablement propor-*

tionnelle à l'étendue des lésions de cette zone." (No italics in original.)

That is to say, the deeper the lesion in Wernicke's area, and in this area alone, the greater the intellectual impairment. If this tenet constitutes an integral part of Marie's theory, it constitutes also its *reductio ad absurdum.*

In what does this defect of intelligence consist? We look in vain for any definition of intelligence in these communications, but we are left in no doubt as to what is considered by Moutier an intellectual defect. Memory, association of ideas, judgment, attention, descriptive and emotional language of gesture, are all included, as are the imagination, the emotions, and much else. "La mémoire est extrêmement touchée." "L'aphasique est un distrait." "L'inattention joue un grand rôle dans les troubles de la mémoire." "La volonté se montre fréquemment abolie." "L'imagination est pauvre." "Les aphasiques sont fréquemment d'une émotivité anormale." "Le jugement est aboli," etc. etc. This extraordinary collection of heterogeneous defects is attributed to an intellectual impairment—infinitely variable!—which is localised at the posterior extremity of the left fissure of Sylvius. The greater the lesion there, the more pronounced the mental disturbance. In may be said of this conception that rarely has anything more unphilosophical and unscientific been launched seriously and deliberately on the educated thought of the time. One of Marie's arguments against the existence of "centres" in the left hemisphere is that since reading and writing have been but lately acquired in the history of the race, to postulate a reading and a writing centre, mushroom growths in the brain of man, is "useless and inane." Yet these functions must be represented somewhere in the cerebrum. What are we to say, then, of his "intellectual centre"—for it is no whit less a centre than the others—exalted to that proud position by the very author who denies the existence of centres? It is not merely inane and useless, but positively harmful, because it causes so much confusion.

Much has been made of the special intellectual defect constituted by the actual speech difficulties of the aphasic. Both Marie and Moutier seem to claim for their views the merit of absolute novelty, and to hold that the classical theory considers speech defect as a purely sensory phenomenon, not a psychical one, or at least not an intellectual one. Says Marie, "les troubles de langage sont dus à un trouble d'élaboration intellectuelle et non, comme le disent les auteurs, à un trouble de réception sensorielle." Again, "pour moi il ne s'agit pas du tout d'un trouble de simple réception psychique sensorielle, mais d'un trouble d'élaboration intellectuelle!" (italics in original). I frankly confess that such a distinction seems to me meaningless. I cannot tell—nor do the authors explain—where psychical—mark the word—reception ends and intellectual elaboration begins. Little wonder that Monakow considers the whole theory somewhat artificial and crude ("kunstliche und roh"). It is true that in his article in the *Revue de Philosophie* Marie says, "n'étant malheureusement pas du tout psychologue, je me contenterai de parler ici en médecin qui a médicalement observé des faits médicaux," and in view of this confession a natural hesitation in discussing psychological problems might have been expected, instead of which we are confronted with an iconoclastic revision of the subject—a revision which, as Déjérine says, has swept away at a stroke the accumulated results of eighty years' investigation. It has been pointed out at the beginning of this article that inasmuch as every disturbance of speech involves a disturbance of certain psychical states, it is to that extent a psychical disturbance. In face of the philosophic discussions of aphasia by Jackson and Bastian, it is somewhat of an injustice to describe the classical theory as being concerned merely with sensory receptive centres.

That some defect of general intelligence, so described, is a constant feature of every case of aphasia is simply an assertion which does not require to be confuted. One need but refer to many carefully recorded instances of the contrary, from that of Abercrombie in 1837 to the latest detailed by Déjérine in 1907. Are we to be asked to limit attention, imagination, emotion, judgment, and memory to the area of Wernicke (of the limits of which, by the way, Moutier confesses his ignorance)? That in a high proportion of Marie's clinical observations some defect of general intelligence on the part of the patient was revealed is readily understood when we remember the nature of the clinical material. Many patients were old men whose intellectual faculties must have been dulled by causes other than the aphasia, such as generalised cerebral arteriosclerosis, etc. In any case, therefore, we should expect to find diminution of intellectual activity, but to associate this with a lesion in the distribution of the left sylvian artery is contrary to all the elementary principles of physiology and psychology.

It is one of the gravest defects in the work of Moutier that he has failed to avail himself of the results of recent advances in cerebral function and localisation. Instead of amassing every variety of psychical anomaly which his patients exhibited into an amorphous and fortuitous congeries of symptoms, and labelling them " intellectual defects," it would have been more in the spirit of the age had he at least endeavoured to analyse and differentiate them, for the sake of advancing knowledge. It is not by any such ill-considered and easy procedure that truth is reached. The way in which the subject of apraxia is almost ridiculed is greatly to be deplored. It is clear that the author has entirely failed to understand it. On page 760 of his *Thèse* he defines Liepmann's motor apraxia as " trouble de co-ordination des actes, un peu compliqué par l'inattention ; difficile à distinguer de l'aliénation méntale légitime." And again : " nous ne connaissons pas de cas d'apraxie qui ne soit, au dernière analyse, agnosie, parésie, ou démence." And again : " l'apraxie motrice de Kleist n'est qu'une ataxie." And again : " l'apraxie par inattention de Pick est-elle autre chose que du déficit intellectuel ? " That such statements should be made by a man of Moutier's erudition is infinitely to be regretted. Their inaccuracy is only equalled by their superficiality. What *is* legitimate mental alienation, pray ? Is apraxia any the less apraxia because it may occur in the so-called " insane " ? What *is* dementia ? Where does dementia begin ? Are we to waive all discussion of intellectual symptoms because they are found in the " demented " ? Ought we not rather to labour to disentangle the known from the unknown ? When one remembers the classical case of Voit, and the manner in which it has been investigated by a succession of individuals, Grashey, Sommer, and Wolff ; when one thinks of the recent endeavours of Pick, Liepmann, Maas, Hartmann, Forster, and others to place apraxia on a secure pathological basis ; in short, when one takes a survey of the level our knowledge of cortical processes has reached, one can only express regret that anyone is to be found to-day who is content summarily to dismiss any and every complicating factor of aphasia as a "déficit intellectuel."

These new views on aphasia, then, have met with a mixed reception. While it appears impossible to subscribe to them in their entirety, no one can deny the honesty of purpose of their author, who has for more than ten years devoted himself unwearyingly to their examination. His very enthusiasm for the subject has inspired many others, and the renewed zest with which the question is being explored—witness the recent discussions at the Neurological Society of Paris—can only result in an increased devotion to the problem of its solution. We can no longer be content to allow theory to outrun pathology.

"LACHRYMAL REFLEXES: PRESSURE-SENSIBILITY OF HEAD AND NECK: AND THE SQUEEZED-TONGUE-SENSATION."

By LEONARD J. KIDD, M.D.

1. *Lachrymal Reflexes.*

THE diagnostic value of the naso-lachrymal, and to a less extent of the conjunctivo-lachrymal, reflex was first prominently brought before the notice of clinicians by Dr William G. Spiller in May 1902 (1), though he had previously touched on the subject.

During the past 6½ years I have been continuously watching for suitable cases on which to test the point indicated, viz., the preservation of naso-lachrymal reflex in hysterical hemianæsthasia limited to the face. This condition is rare in London, so much so that in the course of a large neurological experience I have seen only two such cases since June 1902. In both a definite lachrymation was obtained by a probe passed into the nostril of the affected side and moved about for about five seconds. In one the flow was less than in the other: this I attribute to the fact that I moved the probe about much less freely than was done in the other. Both were obviously of hysterical nature, and in both the reflex was tested in order to confirm the diagnosis. It is to be noted that Spiller sometimes introduces a piece of paper up the nostril, and leaves it there for as long as three minutes.

At present all the available clinical and pathological evidence supports his belief that the afferent path of the naso-lachrymal and conjunctivo-lachrymal reflexes lies wholly in the afferent 5th root. Section thereof in animals would throw light on the question.

Of the lachrymal reflexes, apart from those obtained from spinal nerves, there are three chief ones :—

(1) Naso-lachrymal
  - (*a*) Anterior, from intra-nasal area of nasal branch of 1st division of 5th.
  - (*b*) Posterior, from intra-nasal area of sphenopalatine of 2nd of 5th.

(2) Oculo-lachrymal
  - (*a*) Photo-lachrymal, *e.g.* by strong light thrown on the eye.
  - (*b*) Conjunctivo-lachrymal, by mechanical stimulation.

(3) Linguo-lachrymal, obtained by a powerful squeeze of the tongue
  - (*a*) Anterior, from lingual and chorda area.
  - (*b*) Posterior, from glosso-pharyngeal area.

It is perhaps doubtful whether 3 (*b*) could in certain cases be effectually studied clinically : I shall refer to this again in discussing the clinical applications of the squeezed-tongue-sensation.

It is rather surprising that the lachrymal reflexes are not mentioned in the Papers of Dr Morriston Davies (6), and of Mr Groves (8). Moreover, though Davies discusses certain points about lachrymal secretion, he makes no reference to the important Paper of Dr J. Herbert Parsons (7), 1902.

Messrs R. H. Ivy and L. W. Johnson, in their valuable paper on the preservation of deep sensibility of the face after destruction of the 5th nerve (2), refer to the photo-lachrymal reflex (p. 37), to the effect that while the naso-lachrymal reflex may be lost, "yet it is possible that the lachrymal reflex may be evoked by exposure of the eye to strong light." From the wording of this passage I am uncertain whether they mean that they thus tested this reflex in man. We have all personally experienced the sneezing reflex, accompanied by lachrymation, on looking suddenly at or near the sun ; but it is doubtful whether it is produced wholly in a reflex manner : it is probably caused in part by the coincident spasmodic action of the orbiculares oculi muscles that takes place in the act of sneezing, and thus squeezes conjunctival secretions out over the lower lid. Further, lachrymation accompanies sneezing quite apart from bright light.

In testing the naso-lachrymal reflexes we should bear in mind that a probe passed vertically upwards in the anterior part of the nostril, and either slightly inwards or outwards, stimulates the nasal of 1st of 5th area, whereas one passed backwards tests the 2nd of 5th area. Future clinical testing will decide whether greater lachrymation is obtained from the larger posterior area or not.

2. *Pressure-sensibility of Head and Neck.*

On the afferent path, or paths, of this form of sensibility in man the clinical and pathological evidence is conflicting. Thus Morriston Davies, in his paper on the functions of the trigeminus (6), 1907, based on post-operative clinical study of thirty cases of Gasserianectomy, writes (p. 241): "Deep sensation was invariably absent where there was total loss of sensibility of the skin; this would seem to be satisfactory evidence that sensory fibres for the muscles of the face travel in the 5th nerve." Then later (p. 250) he writes: "Deep pressure is occasionally appreciated." He gives no particulars of the cases in which this, in his experience exceptional, phenomenon was noted, nor does he discuss its meaning. Again, on p. 251 he writes: "But digital strong compression of soft tissues on the bone gives sensation of a slight touch, badly localized however."

On the other hand, one of the chief conclusions of Ivy and Johnson (2), 1907, was (p. 38) that: "The 7th nerve conveys fibres of deep or pressure sensibility from the muscles which it supplies with motor fibres.

It is right to point out that Davies' paper was published in July 1907, and that of Ivy and Johnson, published in Philadelphia in May and June 1907, could hardly have reached London before Davies must have sent in his paper; naturally, therefore, it contains no reference to theirs.

The case of Spiller's, clinically studied by his two pupils, Ivy and Johnson, and described by them (2), p. 37, is the same one of a tumour completely destroying the right Gasserian ganglion recently described by Spiller (3), (case 1, Nov. 1908), with an account of the findings at the autopsy. It strongly supports the view that the afferent path of pressure-sensibility of the trigeminus area is not *viâ* the 5th root, and may be in the afferent 7th root.

The recently recorded case of Mr Ernest W. Hey Groves (8), 1908, who has already published an abstract of the case in this *Review*, is of very doubtful value in this connection. One year after the operation there was preservation of deep pressure-sensibility limited to the right cheek and lips. I know of no other recorded case in which deep pressure-sensibility was present in one part of the 5th area and lost over the rest of it; it appears to be usually either lost or preserved over the whole area.

The following are the most important points in Spiller's case 1 (3), 1908, that seem to bear on the question under discussion—(p. 713) he writes:—"Tactile sensation completely lost in entire trigeminus distribution, provided no pressure is produced; also sensation of pain; anæsthesia of right cornea and conjunctiva; jaw goes distinctly to right when mouth is opened. A piece of paper put far up the nostril is not felt unless pressure is produced, and causes no lachrymal reflex."

In none of Dr Spiller's papers known to me[1] does he differentiate between pressure-sensibility of the smaller anterior intra-nasal area innervated by the nasal of 1st of 5th, and the larger posterior area of 2nd of 5th. The fact that the paper was put up the nostril makes me think that he may have tested exclusively the anterior area in his case 1. The possible importance of this differentiation will appear presently.

Ivy and Johnson (2), p. 36, quote van Gehuchten ("Système Nerveux," 1906) to the effect that the 7th nerve "at its exit from the stylo-mastoid foramen contains undoubtedly a certain number of sensory fibres which arise in the geniculate ganglion."

They also refer to the remarkable findings of Amabilino, cited by v. Gehuchten, that about $\frac{1}{5}$th of the cells of this ganglion remain normal after section of the chorda tympani. V. Gehuchten holds that these cells send their peripheral processes into the peripheral muscular branches of the 7th nerve. Clearly section of the facial trunk in animals (care being taken to prevent reunion) should reveal later on degenerated fibres in all these muscular branches, perhaps extending into the small branches that communicate with trigeminal branches on the face and scalp, and into the various facial branches that communicate with branches derived from the 2nd and 3rd cervical nerves. The axonal reaction might also be studied, and the distribution of the cells in the ganglion determined. Amabilino's experiment ought also to be repeated.

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[1] I have not had access to his two papers (given in the list of references by Ivy and Johnson (2)), viz., in "Progressive Medicine," (*a*) Sept. 1899, p. 306, and (*b*) Sept. 1900, p. 261.

Ivy and Johnson (2) abstain from offering any suggestion as to the afferent path of deep pressure-sensibility fibres from the numerous small inter-muscular spaces between the various facial muscles: these spaces are presumably all innervated by the numerous trigemino-facial and cervico-facial communicating branches. The chief branches in man are as follows:—(1) temporal of 7th with lachrymal and supra-orbital of 1st of 5th, and auriculo-temporal of 3rd of 5th; (2) malar of 7th with malar of 2nd of 5th; (3) infra-orbital of 7th with infra-orbital of 2nd of 5th, and infra-trochlear and nasal of 1st of 5th; (4) buccal of 7th with buccal of 3rd of 5th; (5) supra-mandibular of 7th with mental of inferior dental of 3rd of 5th; (6) infra-mandibular of 7th with superficial cervical from 2nd and 3rd cervical nerves; (7) trunk of 7th in the parotid gland with great auricular of C 2 and 3, also with auriculo-temporal of 3rd of 5th; (8) posterior auricular of 7th with great auricular and small occipital, and with auricular of vagus.

It is important to note that the branches of the motor 5th to the masticatory muscles and the mylo-hyoid and anterior digastric do not communicate with any nerves. Although the spaces between the various facial muscles are mostly very small, yet there are certain ones that could and should be specially tested for pressure-sensibility after Gasserianectomy. Thus the area of the vertex lying immediately behind the posterior border of the frontalis and above the temporal muscle should be so tested. On the sensory fibres to facial muscles Professor A. M. Paterson writes, in "Cunningham's Anatomy," 1906, p. 686, in summarising the 5th nerve: "By numerous communications with the facial nerve, sensory fibres are given to the muscles of expression supplied by the 7th nerve." If he be right, Gasserianectomy in animals followed by study by the degeneration method should reveal degenerated fibres passing *viâ* these communicating branches up all the muscular branches of the 7th. It is of interest to note that Dr F. H. Edgeworth (10) found in the dog (p. 124) that "it was easy to see that the branches to the temporal, masseter, and pterygoid muscles come exclusively from the motor root, and receive no fibres from the sensory root of the 5th (this fact had been previously stated by the late Professor His)."

One of Ivy and Johnson's conclusions was (2) (p. 38): "The muscles of mastication, which derive their motor supply from the 5th nerve, probably are also furnished with fibres of deep sensation by that nerve." If these masticatory muscle-sensory fibres rise in the Gasserian ganglion they must enter the motor root to reach the muscles. Here, again, Gasserianectomy in animals should throw light on the question.

Another point of extreme interest was brought out by Edgeworth (10) as far back as October 1899, pp. 124, 125: Dr Aldren Turner divided for him the 7th root intracranially in a Rhesus monkey; the branches were examined three weeks later; on the sound side the fibres going to the posterior digastric and the stylo-hyoid muscles were larger than those contained in the other motor facial branches (thus agreeing with the dog). On the cut side all the medullated fibres in the posterior digastric and stylo-hyoid branch had disappeared with the exception of three only, all of which were under 4 μ in diameter. The facial trunk, however, distal to the posterior digastric and stylo-hyoid branch showed with the degeneration of a large number of the medullated fibres that many (? a third of the original number) persisted; these were of all diameters up to 11·2 μ as a maximum.

Edgeworth considers it probable that the three small fibres in the posterior digastric and stylo-hyoid branch come into the 7th from without, possibly from the sympathetic *viâ* the great superficial petrosal branch; and he writes (p. 125): "It is concluded that whereas these two muscles have no posterior root ganglion fibres passing to them, the other muscles innervated by the 7th receive not only motor fibres, but also many muscle-sensory fibres, having their posterior root ganglion cells in the geniculate ganglion."

This is highly suggestive when taken along with the work of Amabilino above referred to. It naturally leads one to this question: Seeing that these two muscles are immensely more phylogenetically ancient than the peripheral facial muscles, can it be the case that all true branchial muscles are devoid of muscle-sensory fibres? The peripheral facial muscles are of course developed from the musculature of the hyoid segment, but they never had a branchial function; so they are branchial in a very different sense from the two muscles named. Possibly experiments on lower vertebrates might answer the query I have just asked. I know of no direct evidence on the point.

One point in connection with experiments in mammals on the numerous points mentioned in this paper—they must be done either in primates or carnivora, for the reason that only in them is there a facial musculature in the least approaching that of man in complexity; further, the more closely the communications between the 7th and 5th and the 7th and C 2 and 3 approach the human type the better.

On the question of pressure-sensibility of the upper half of the neck nothing appears to be known; but clearly its afferent path may lie in certain branches of the 7th, chiefly the posterior auricular and the infra-mandibular.

The question of the ganglionic origin of the sensory fibres going to the muscles innervated by the 1st cervical nerve is an interesting one, because there is usually no 1st cervical ganglion in adult man. Do they rise in the 2nd cervical ganglion? On this point nothing appears to be known yet. If they do so, they probably pass *viâ* the loop of communication between the 1st and 2nd cervical nerves, and thence into the muscular branches, conveying motor fibres from the 1st cervical segment to the muscles concerned.

In a paper on "The Difference between Central and Peripheral Facial Paralysis,"[1] C. Hudovernig, writing in connection with the statement that the so-called supra-orbital reflex is lost in peripheral facial palsy, denies that this is a true reflex, and points out that the phenomenon can still be elicited after division of the 5th or Gasserianectomy. But clearly, in view of the evidence given above concerning afferent facial fibres, this fact would not of itself prove the point. Therefore we do well to keep an open mind on the subject at present.

If the 7th nerve contain pressure-sensibility fibres, they pass centrally, presumably *viâ* the pars intermedia. At first sight the small size of this afferent root and of its ganglion, as compared with the great size of the 5th root and ganglion in higher vertebrates, might appear to suggest that it is unlikely that pressure-sensibility fibres from facial muscles and subcutaneous cervico-cephalic tissues should travel by this path, for it has possibly to transmit taste fibres as well.

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[1] *Neurol. Centralbl.*, 1908, p. 577. (Abstract in this *Review*, Aug. 1908, p. 485.)

But, in answer to this, we can hardly doubt that the deep afferent system needs a far smaller number of fibres for its transmission than does the cutaneous epicritic system of afferent fibres. We must look upon the afferent 5th as *par excellence* an epicritic nerve, whereas the afferent 7th conveys probably the relatively low-grade deep sensibility fibres.

This reasoning helps us also to understand the relatively large size in man of the 2nd cervical ganglion, which supplies such a large area of cutaneous epicritic territory.

As to the afferent path of intra-nasal pressure-sensibility, if, for the sake of argument, we exclude the 5th root, the path from the anterior area is presumably up the internal nasal branch, then down the external branch of the nasal nerve, thence by its communicating branch with the infra-orbital of 7th, and so up the 7th trunk. In the case of the posterior area, there are two alternative routes—(*a*) the more direct *via* the vidian and great superficial petrosal to the geniculate ganglion; (*b*) a very roundabout one, through the spheno-palatine ganglion into 2nd of 5th, its orbital branch, its malar branch which communicates with the malar branches of 7th, thence up 7th trunk.

I know of no recorded cases but those of Spiller's in which it is stated that intra-nasal pressure-sensibility was tested clinically. I suspect that it has been widely neglected. As to the best mode of testing it, I think a smooth, polished wooden rounded pen-holder, of about the size of a No. 5 or 6 catheter, would be better than a probe, but this suggestion is theoretical only.

Concerning the question of sensory fibres in the 7th nerve, Dr John K. Mitchell (9), 1898, p. 399, writes:

"Frankl-Hochwart examined, in Nothnagel's clinic, some 20 cases of facial paralysis; in 8 of these he found sensory or vaso-motor disturbances; sensation was very little altered in any of them, and the disturbance appears, from the brief reports of his observations, to have consisted merely in the slighter grades of anæsthesia. He believes that these slight changes give ground for the assumption that sensory fibres exist in the facial nerve in man, as it is well known they do in animals."

A piece of my own experience tends to confirm these findings. Out of several hundreds of cases of facial palsy I have seen in the course of a twenty-seven years' experience, I have been struck by the frequency of light finger-touch anæsthesia in those cases, numbering about seventy, in which I have tested, or seen others test, the sensibility of the face in cases of recent Bell's palsy. Of these tested cases, I estimate that 75 per cent., or more, have shown slight sensory changes, so much so that the question of the possibility of a coincident slight neuritis of the 5th has been discussed; but in no case was any other evidence of this forthcoming, nor was there ever any evidence of a pontine lesion obtained at the time when I saw the cases. Thus my experience (which was not written down at the time in most cases, and which I give with reserve) shows about twice as large a percentage in from three to four times the number of cases examined by Frankl-Hochwart. The subject is well worthy of renewed investigation. The modern teaching is that even light finger-touch tests deep sensibility.

I must here briefly refer to two of Dr Harvey Cushing's excellent papers. In the first one (4), 1903, on the taste-fibres and their independence of the 5th, based on a study of thirteen cases of Gasserianectomy, he writes (p. 75): "It seems not impossible that the chorda tympani may contain afferent fibres transmitting qualities other than those of special sense. Köster (*Deutsches Archiv f. Klin. Med.*, 1900, Band 68, p. 571), as a result of his experimental work, was led to the same conclusion; and in his second paper (*loc. cit.*, 1902, p. 519) reports cases of facial paralysis in which a hemi-lingual hypæsthesia has accompanied the loss of taste on the anterior area of the tongue."

In his second paper, on the sensory distribution of the 5th nerve, Cushing (5), 1904, pp. 221-222, writes that after Gasserianectomy "a cotton swab or a wisp of cloth moved over the anæsthetic field is recognised, localised more or less accurately, and its direction of movement appreciated." Morriston Davies (6), 1907, was not able to confirm this statement.

Cushing, on p. 222, writes that he had observed "a patient in whom both the 5th and 7th nerves were totally paralysed;

there was no sensation whatever over the anterior part of the tongue to touch, taste, pain, temperature, or the movement of a swab over the surface."

We must always remember that when we test a normal person by firm pressure applied anywhere, we are pressing on all the nerves and other structures between the point of pressure and the underlying bone. Dr Head has insisted rightly that deep sensibility is best tested when superficial sensibility is eliminated by complete interruption of its afferent path. This is referred to by Ivy and Johnson. Still we ought to test deep sensibility, because an intelligent patient may be able to detect slight differences between the deep sensibility of neighbouring areas; but we must not be surprised if we fail to gain positive information.

Anyone who may undertake any experiments on the facial nerve to determine any of the numerous points I have indicated above might attempt to settle the question of the innervation of the membrana tympani.

Dr J. Ramsay Hunt (*Amer. Journ. Med. Sciences*, Aug. 1908, p. 226) places it in the area of the geniculate ganglion, whereas Dr T. J. Orbison (*Journ. Nerv. and Ment. Disease*, Aug. 1908, p. 500) favours the petrosal ganglion. It is, after all, possible that it has a double innervation. Hunt's point could be experimentally tested by the degeneration method (the details will occur to anyone who studies the anatomy of the nerves concerned); it is also just conceivable that a very expert operator might succeed in extirpating the petrosal ganglion without killing the animal in the attempt. Further, if Hunt be right that there is a primary otalgia due to a specific inflammation of the geniculate ganglion (*Journ. Nerv. and Ment. Disease*, Feb. 1907), there appears to be no good reason why the same should not apply to the petrosal, *i.e.* if it should be proved that the membrane has a double innervation. It is to be noted that in Orbison's case the herpetic eruption was on the posterior surface only of the membrane.

The result of Morriston Davies' study (6) was that the whole of the tympanic membrane is supplied by the 5th in about a quarter of the cases, part of it in another quarter, and none of it in about half.

Cushing also found (5) that the drum was anæsthetic to a greater or less extent. Both these observers tested its sensibility by fine horse-hairs.

From the above references it is clear that the question of the innervation of the membrana tympani is still uncertain.

3. "*The Squeezed-Tongue-Sensation.*"

An accidental bite of one side of the tongue produces (1) severe pain, not quite like any other; (2) homolateral lachrymation.

On strongly squeezing the tongue digitally one feels a burning, tingling sensation, amounting to pain. If the squeeze be maintained for half a minute or so, an after-sensation of tingling and dryness is felt, lasting for from five minutes to an hour, according to the force used. A very mild degree of this can be obtained by powerful protrusion of the strongly pointed tongue kept up for a minute. So, too, a strong facial grimace gives rise to facial pain. The facial pain that follows prolonged laughter is familiar to all. Doubtless all these pains, like the severer pain of cramp, are produced by the strong compression of sensory fibres in the contracting muscles. Those who wish for a Greek term for the squeezed-tongue-sensation will perhaps accept "Glosso-Piesto-Æsthesia."[1]

The prefixes hyp-, or an-, before æsthesia would explain themselves. The clinical application of this form of sensibility would have at least this virtue, viz., that few persons appear to have, even out of curiosity, squeezed their own tongues. At present I have not met even a medical man who knew of it. One such squeezed so hard that a linguo-lachrymal reflex was at once evoked: the tears poured over his cheek on the side squeezed.

It is only quite recently that I have thought of applying this clinically. It seemed possible that in tabetics, especially of the upper type, the sensation might be diminished or lost early in the course of the disease. I have at present tested only one tabetic, not, however, of the upper type. The patient seemed intelligent, and evidently felt the squeeze, but I could not coax him to describe what he felt. The sensation is so characteristic that it appeared possible it might be diminished slightly. It seems wise to bring this form of tongue sensibility before clinicians even in this preliminary stage, for if it be tested by many observers in many cases, we shall arrive much sooner at its real value.

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[1] Piézo, I squeeze, press (Plato and others). Piestòs, pressed (Aristophanes).

It is easy to limit the squeeze strictly to one-half of the organ. For the anterior region one uses a cloth held between thumb and first finger; for the posterior area probably tongue forceps would be needed.

Clinical Conditions for Testing this Sensation.

1. Tabetics, whether about normal (this is difficult to fix) or diminished, or lost. If lost, is it lost early? Can an anterior linguo-lachrymal reflex be got? If lost, is it lost early?

2. Paretic dementia, in patients who do not show so great a degree of mental failure that their answers are unreliable.

3. Hysterical hemi-anæsthesia involving tongue, also cases of hemi-lingual spasm. One would expect that in these cases it would be possible to evoke a linguo-lachrymal reflex, and thus confirm the diagnosis.

4. After Gasserianectomy: should it be lost, there is no reason why we should not try to get a linguo-lachrymal reflex; analogy suggests that we should fail to do so. It is possible, however, that the sensation might be preserved, just as in Spiller's case 1 (3) pressure-sensibility of the face was preserved.

An attempt might be made after Gasserianectomy to test the posterior lingual area by seizing the affected half of the organ with tongue forceps, but very likely the vomiting-reflex would spoil the test.

What is the nature of this form of lingual sensibility? In a normal person we cannot eliminate the element of superficial lingual sensibility that depends on the lingual of 5th (possibly also the chorda tympani in part). Normally the dorsum shows a far higher degree than the under surface; further, the localisation is accurate on the dorsum, so that with the eyes shut one can touch the tingling dry area with the finger, a fact that one has verified before a mirror. It seems clear, therefore, that superficial sensibility normally plays a predominant part; but the extrinsic muscles are squeezed, and their deep-sensibility nerve-fibres also play a part in the sum total of afferent impulses. The intrinsic muscles are said to possess no muscle-spindles.

Professor Sherrington (11), in his summary on p. 255, mentions that in the cat and monkey (on which he chiefly worked) the hypoglossal nerve contains abundance of fibres from sensory ganglia, but he did not, apparently, determine from which they came. But, in examining the nerves of an *a*-myelous fœtus with spina bifida, he writes thus of the hypoglossal nerve, p. 251: "Tracing the normal-looking nerve-trunk backwards, it seems to be almost exclusively formed by a branch from the 2nd cervical ganglion and another from the vagus below the vagus ganglion."

A squeeze of the posterior lingual area would stimulate the glossopharyngeal nerve-fibres and also some of the extrinsic tongue-muscles, chiefly the hyo-glossus and stylo-glossus and palato-glossus.

Experiments on animals directed to the various nerves concerned could settle the question of the afferent path of both the anterior and posterior linguo-lachrymal reflexes. No one appears to have clearly demonstrated that muscle-sensory nerve-fibres rising in the 2nd (perhaps also the 3rd) cervical ganglion are distributed to the extrinsic tongue muscles. Extirpation of these ganglia should later show degeneration of these fibres, ending as suggested. It is well known that the 1st cervical ganglion is usually absent in adult man, and when present is rudimentary. We must therefore almost certainly look to the 2nd and 3rd cervical ganglia in this matter.

Complete lesions of the 12th nerve in man are not at all common; in such cases the squeezed-tongue-sensibility should be tested. It is possible that they might show some diminution of this, together with preservation of linguo-lachrymal reflexes.

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Abstracts

ANATOMY

CONTRIBUTION TO THE ANATOMY AND PHYSIOLOGY OF (133) THE HYPOPHYSIS. (Contributo all' anatomia ed alla fisiologia dell' ipofisi.) ORESTE SANDRI, *Riv. di Pat. Nerv. e Ment.*, Vol. xii., Fasc 11, p. 518.

THE article deals with great thoroughness with our present knowledge of the anatomy of the hypophysis. A brief exposition of what is known of the physio-pathology of the gland and an extensive account of the results obtained from its ablation preface the original work of the author. He has set before himself the following problems, having decided not to touch upon the already much-investigated subject of the relation of pituitary extract to the blood pressure:—The question as to what portion of the pituitary has an influence on the cardiavascular system; to observe the changes that may be induced in various organs by the injection of pituitary extract; the relation between pituitary hyper-function and somatic growth. The experiments were divided into three categories: implantation of pituitary body, oral administration of pituitary, and injections of pituitary extract.

The author comes to the following conclusions:—

Not only the epithelial lobe but also the so-called nervous lobe of the hypophysis contains glandular cells with active and secretory character.

The anterior and posterior portions of the epithelial lobe are composed of two different types of cells, differing not only morphologically but in functional activity. The chromatophil and the chromatophobe cells of the anterior portion of the epithelial lobe merely represent two different stages of functional activity of the same cell. The cardiovascular effects obtained by injections of pituitary extract are due to cell secretion from the posterior portion of the epithelial lobe, the infundibular gland of some authors, a portion of the gland which, when the two lobes are separated, always remains attached to the nervous lobe.

The active principle has a toxic action in addition to its action on the cardiovascular system.

No results were obtained by implantation of hypophysis; in animals of the same species the grafts are readily absorbed.

By feeding growing mice for some months with large quantities of pituitary of the bull, an arrest of growth was observed in those animals which received the active portion of the hypophysis. No visceral or nervous change was verified.

Guinea-pigs injected with the active portion showed changes in the nervous system and the kidneys.

Young guinea-pigs subjected for a long time to injections of pituitary extract showed arrested development in those that were injected with the active portion, but those injected by the inactive portion were unaffected.

The arrest of growth only lasts during the period of the injections. F. GOLLA.

ON MEASUREMENTS OF THE CORTEX. (Ueber Rindenmessungen.)

(134) K. BRODMANN (of Berlin), *Zentralbl. f. Nervenh. u. Psych.*, Ht. 21, 1908.

BRODMANN calls attention to the discrepancies between the results of the various studies on the thickness of the brain cortex (Kaes, Hammerberg, Campbell). He finds that the thickness given by Kaes is too large by 30 to 100 per cent. He sums up the results of his own measurements as follows:—The breadth of the human cerebral cortex varies in normal conditions from 1·5 to 4·5 mm. at the crest of the convolutions. With regard to the crest of the convolutions the following points must be noted:—1. Important regional differences between the various cortical areas. These differences form one of the main characteristics of the topographical variations on the brain surface. 2. Local variations of lesser degrees within individual area. 3. Individual differences between the brains of different individuals; these may be considerable.

In addition, there are marked differences between the crest and the trough of the convolutions with regard to thickness.

C. Macfie Campbell.

CORTEX MEASUREMENTS. (Ueber Rindenmessungen.) Eine (135) Erwiederung an Dr K. Brodmann. Theod. Kaes, *Neurol. Centralbl.*, Feb. 15, 1909, S. 178.

This is a reply to some remarks in a paper by Brodmann (*Centralbl. f. Nervenheilk. u. Psychiatrie*, Nov. 1, 1908), who finds a remarkable discrepancy between his results and those obtained by the author of the present paper. Kaes points out that this difference depends on the fact that the tissue he examined was hardened in Müller's fluid, while Brodmann, on the other hand, used alcohol for the purpose.

Edwin Bramwell.

ON THE STRUCTURE AND FUNCTION OF THE CHOROID (136) PLEXUS. (Sur la structure et la fonction des plexus choroidiens.) M. Francini, *Arch. Ital. de Biol.*, Vol. xviii., fasc. 3.

In this work, which is both histological and experimental, the author endeavours to study the histological characteristics of secretory activity of the choroidal epithelium and the modifications that are produced in experimental and pathological conditions. The experiments were performed on frogs, guinea-pigs, rabbits, and dogs. The intravital coloration method of "Brillant-Cresil Bleu" was employed, following the technique of Cesaris Demei.

In normal conditions granules appear in the nuclei of the choroidal epithelium cells, which, on passing into the protoplasm, become droplets, surrounded by a membrane that appears to be derived from the primitive granule. These droplets burst through the free margin of the cells and enter into the cerebro-spinal fluid.

From an examination of the choroid plexus of the fœtus and new-born animal it appears that the secretory function commences in the last period of intrauterine life, and undergoes a temporary augmentation at the moment of birth.

Pilocarpine excites the activity of the nucleus, and augments the number of granules which, without first undergoing their transformation into drops, burst into the ventricular cavities. Atropine acts in the opposite fashion, retarding secretory activity. In general intoxications of bacterial origin from intravenous injections of a virulent culture of the staphylococcus aureus, or autointoxications caused by nephrectomy, there is first a hypersecretion, followed in the dying state by necrobiosis of the epithelial cells of the choroid. In cerebral inflammation caused by the intracerebral injection of the staphylococcus pyogenes aureus the mechanical and toxic stimulus caused by a local encephalitis gives rise to an evident and prolonged hypersecretion of the choroidal epithelium, that continues to the death of the animal.

This phenomenon evidently plays a part in the pathology of acute inflammatory hydrocephalus. F. GOLLA.

THE STRUCTURE OF THE MIDDLE ZONE OF THE SPINAL (137) CORD. ITS CELL CONTENTS, ESPECIALLY THE MIDDLE CELLS. (Vom Aufbau der Mittelzone des Rückenmarks, etc.)

Z. REICH, *Arb. a. d. Neurol. Instit. a. d. Wien. Univ.*, 1908, Bd. 17, Hft. 2, S. 314.

THE writer has found the same difficulty as other investigators in exactly defining the limits of the middle cells and distinguishing them from other small cells in the middle zone. He has studied them not only in the human cord but in a large number of other vertebrates, and he limits the term to the group originally called middle cells by Waldeyer—corresponding to the "Tractus Intercornualis" of Jacobsohn.

In the cervical, lumbar, and sacral regions they are found in the middle zone, level with the central canal and commissures; in the dorsal region they are pushed dorsolaterally, lying on the antero-lateral margin of Clarke's column, or even amongst the cells of that column.

The middle cells occur as a distinct group in animals with a well-differentiated cord, and *vice versa*, and their distinctness as a group is in direct proportion to the distinctness of Clarke's column as one.

He considers that they are closely allied to Clarke's column, both anatomically and functionally—the one group of cells supplementary to, or even acting as substitutes for the other. The middle cell fibres have not been actually traced, but the author thinks they form a considerable part of the direct cerebellar and of Gowers' tract. J. H. HARVEY PIRIE.

STUDIES IN CELLULAR MORPHOLOGY IN THE SPINAL (138) GANGLIA OF MAN. (Rilievi di morfologia cellulare nei gangli spinali dell' uomo.)

G. ESPOSITO, *Riv. Ital. di Neuropatologia*, Vol. i., fasc. 2.

THE spinal ganglia of four individuals were studied. One died of marasmus; another of arteriosclerosis, aged 68; the third from cysticercus, æt. 46; and the fourth was a case of cerebral diplegia of 34 years, who died in a marasmic condition.

The intravertebral ganglia of these four cases were treated by the method of Cajal for demonstrating fibrillæ. In the first case the multipolar cells were few in number, and so also were the cells furnished with branched processes, which re-entered the cell body. On the other hand there were numerous complicated networks of processes which, after surrounding the cell-body, terminated in ball-shaped agglomerations. The so-called fenestrated and fringed cells were never seen in this case. The cell elements were rich in pigment. The giant variations of Marinesco and Nageotte were not observed.

In the second case a large number of multipolar cells was observed with their processes terminating in ball-shaped meshes. Others had globular thickenings on their processes, and others were of gigantic dimensions. Cells full of pigment were observed, as in the first case, and also the cells called by Cajal *desgarrades*—that is, cells with fringed margins and angular irregularities. Besides these cells, others were seen with only one frayed margin, and this disintegration occasionally penetrated well into the cell body.

The third case resembled the first morphologically.

In the fourth a large number of ansiform axones was observed. The multipolar type, with long prolongations, was prevalent. The frayed or fringed type was absent. The fibres of the intraganglionic bundles were here and there furnished with terminal bunch-like thickenings.

The author concludes that individual differences exist in the types of spinal ganglion cells, and that the fenestration met with in some cells is to be regarded as due more to its processes than to protoplasmic disintegration. The fringed cell is to be regarded as a senile type. The reduced silver method does not colour all the satellite cells. F. GOLLA.

THE NATURE OF THE LATERAL SPINES OF THE DENDRITIC (139) PROLONGATIONS OF THE NERVE CELL. (Richerche intorno alla natura delle spine collaterali dei prolungamenti dendritice delle cellule nervose.) CURRERI, *Anat. Anz.*, 1908, p. 429.

THE writer discusses the various theories as to the nature of these spines. He has made a series of investigations, with various methods, using as his material the brains of chickens of different ages. The main morphological conclusions which may be drawn from his results are as follows :—

1. The spines are undoubtedly natural appendages of the dendritic prolongations of the nerve cells.

2. Besides the very short spines, there are others which are very long, with or without ramifications, and all intermediate stages of form and size. All these deserve the name of collateral fibres of the dendritic prolongations of the nerve cell.

3. These contribute to the formation of the diffuse reticulum of Golgi (in its strict sense).

4. The diffuse nervous reticulum described by Golgi, as he himself states, and the collateral fibres of the dendritic prolongations present, as a rule at least, simple ramifications, and not those of the real and proper close network.

5. The connections between the diffuse reticulum of Golgi and the collateral fibres of the dendritic prolongations show relations of simple contact, and it is well, therefore, to give to these two formations as a whole the common name of diffuse nervous spirals (intreccio).

ALEXANDER BRUCE.

THE SEGMENTAL SUPPLY OF THE RECTUS ABDOMINUS.

(140) **(Ueber die segmentäre Versorgung des M. rectus abdominis.)**
EDUARD SCHWARZ, *Neurol. Centralbl.*, Feb. 18, 1909, S. 182.

OPPENHEIM is of opinion that the abdominal muscles have a multiradicular nerve supply, since during a laminectomy he observed that stimulation of the 8th dorsal root produced a contraction in all the abdominal muscles of the corresponding side. As evidence in support of this view Oppenheim stated (1903) that he knew of no case in which localised disease of the grey matter or of the anterior roots in the lower dorsal region had produced an atrophy limited to a segment of the rectus or obliquus muscles.

Cases have since been recorded, firstly, in which the recti have been paralysed, the oblique muscles being unaffected, and, secondly, in which the reverse condition was present. Further, the observations of Salecker have demonstrated that the nuclei for the recti are situated at a higher level than those for the oblique and transverse muscles of the abdominal wall.

The case here described is, so far as the author has been able to ascertain, the first in which an isolated paralysis of a portion of the rectus abdominis has been observed.

The patient was admitted to hospital suffering from paralysis of the right leg and bladder following a stab wound in the back. Three days after the accident the bladder was functionating normally. When examined a month later there was slight weakness of the right leg, especially in the peroneal region, with ankle clonus and an area of dissociated anæsthesia over the right foot and outer side of the leg up to the knee. The left lower limb appeared to be in all respects normal. On the left side of the abdomen there was an area in which the perception of all forms of sensation was impaired, corresponding to the 11th and 12th dorsal and to part of the 1st lumbar root supply. The abdominal reflex was well marked on the right side; on the left side it was less brisk, but distinctly obtainable above and at the level of the umbilicus, while below this level it was absent. The lower third of the left rectus abdominis remained flaccid when the rest of the muscle was brought into action. The oblique and transverse muscles were not paralysed, and all the abdominal wall reacted to Faradism with the exception of the lower third of the left rectus, in which typical R.D. was obtained.

From the distribution of the anæsthesia, the author concludes that injury to the 12th dorsal root accounted for the paralysis of the lower third of the left rectus. EDWIN BRAMWELL.

THE VARIABILITY OF THE LAST LUMBAR VERTEBRA.

(141) MANNERS-SMITH, *Journ. Anat. and Physiol.*, Jan. 1909, p. 146.

IN the January number of the *Journal of Anatomy and Physiology* an interesting article appears from the pen of Mr T. Manners-Smith on the variability of the last lumbar vertebra.

The paper consists in a detailed account of the peculiarities in structure of a collection of Egyptian vertebræ lent to the writer by Professor Macalister.

Mr Manners-Smith first draws attention to the foramina, other than nutrient, found in the neighbourhood of the lateral (transverse) process.

The collection contained four vertebræ possessing costo-transverse foramina. The author is of opinion that the costo-transverse foramina are homologous with the cervical, and that through them passes an enlarged retro-costal anastomosis somewhat similar to that described by Walsham in the upper dorsal region.

In the vertebræ under examination the occasional retro-transverse foramen was found more common than the costo-transverse, and was situated just behind the transverse element of the lateral (transverse) process, and close to the superior articular process. Mr Manners-Smith considers that this foramen transmits a retro-transverse anastomosis between the last lumbar and ilio-lumbar arteries. It corresponds exactly in position with Howes's sacral arcade, which, as Mr Manners-Smith has demonstrated, receives a branch from the last lumbar artery. He suggests that in the lumbo-sacral region a protected retro-transverse anastomosis may take the place of the obliterated retro-costal foramen and anastomosis.

The variation of the neural arch described in the *Challenger* Reports by Sir William Turner occurred in twenty-eight vertebræ. In all these the synchondrosis was situated at the junction of the laminæ with the superior articular processes.

The relationship of the lateral processes of the last lumbar vertebra to the alæ of the sacrum is discussed at some length, and the vertebræ are considered under two types: (1) those vertebræ in which the lateral process on one or other side articulates with the sacrum, though still retaining its lumbar characteristics; (2) those in which there has been resolution of the lateral process into its transverse and costal elements, and in which the costal constituent articulates or fuses with the sacrum. Mr Manners-Smith suggests that the first type is post-natal and the second type ante-natal, while the exciting cause in each case is mechanical.

The article is illustrated with photographs of several of the vertebræ. LEWIS BEESLY.

PHYSIOLOGY.

ON INTERFERENCE BETWEEN TWO WEAK STIMULI. (Ueber (142) Interferenzen zwischen zwei schwachen Reizen.)

MARTIN GILDEMEISTER, *Arch. für die ges. Phys.*, Bd. 124, p. 447.

ON INDIRECT MUSCULAR EXCITEMENT BY TWO WEAK (143) STIMULI. (Ueber die indirekte Muskelerregung durch zwei schwache Stromstosse.)

MARTIN GILDEMEISTER, *Beitrage zur Physiologie und Pathologie*, Festschrift für L. Hermann, p. 53.

IN these two papers the author has investigated in the frog the influence on the response of the muscle of two indirect stimuli following each other at short intervals of time. The stimuli used were either opening induction shocks or condensor discharges, and the first to reach the muscle was a subliminal one, while the second was submaximal and of a strength sufficient to produce a contraction of the muscle of about half the height of the maximal contraction. Different intervals of time, ranging between 0·00044″ and 0·022″ separated the two stimuli.

When the interval between them was less than 0·0018″ the resultant contraction of the muscle was higher than the contraction given by the submaximal stimulus alone. At intervals of 0·0018″ the contraction was of the same height. When the interval lay between 0·0018″ and 0·0053″ the effect of the first subliminal stimulus was to decrease the height of the contraction caused by the second submaximal stimulus, while at greater intervals than

0·0053″ there was a contraction of the muscle of the same height as that given by the submaximal stimulus alone. In well-nourished and lively frogs the interval in which a depression of the resulting contraction was obtained was shorter than in badly-nourished ones, or ones in which there had been much loss of blood. Physical errors were excluded, and the author concludes that a subliminal stimulus raises the excitability of the nerve of the frog in the region of the kathode for a short interval of time, about 0·00044″; while this state of increased excitability is succeeded by one of depression, which lasts about 0·002″ to 0·003″, when the normal state of excitability is regained. T. GRAHAM BROWN.

(144)

THE INFLUENCE OF THE NERVOUS SYSTEM ON THE FORM OF CONTRACTION-CURVE OF THE GASTROCNEMIUS OF THE FROG.

(Der Einfluss des Nervensystems auf die Form der Zuckungskurve des Frosch-Gastrocnemius.) T. GRAHAM BROWN, *Arch. f. die ges. Physiol.*, Bd. 125, 1908.

THE following is the writer's summary of the results of his investigations:—

The gastrocnemius of the frog shows in single spontaneous contractions, or when directly or indirectly excited by means of a maximum induction current, the connection with the central organs being uninterrupted, a contraction curve which as a rule has two summits.

This form is not produced by the nature of the lever, or by the neighbouring muscles, nor is it influenced by the circulation.

After section of the sciatic plexus with a sharp instrument, this double summit still persists. After division by crushing it disappears for a time, to return after a short interval.

Both of these summits may be affected in their size.

(*a*) The first becomes greater under the action of strychnine. It becomes smaller or disappears when the nerve is compressed between electrode and muscle.

(*b*) The second summit becomes greater under the action of strychnine and of compression of the nerve between electrode and muscle. It is decreased or completely disappears in mechanical injury of the nerves, cooling or heating of the nerve and heating of the muscle; and also in injury of the lumbar cord (*Ausbohrung*), after section of the sensory roots, and by reflex action, in chemical excitement of the skin and after poisoning of the lumbar cord, after section of the sensory roots, and, reflexly, in chemical excitation of the skin and poisoning with small doses of curare (by indirect excitation). In most cases the original form of contraction again appears after a time (a few minutes to several hours).

ALEXANDER BRUCE.

(145) NOTE UPON THE EFFECT OF STIMULATION OF THE ACCELERATOR NERVE UPON THE CALCIUM, POTASSIUM, AND NITROGEN METABOLISM OF THE ISOLATED HEART.

HOWELL and DUKE, *Amer. Journ. of Physiol.*, Vol. xxiii., 3, Dec. 1, 1908.

In a previous paper the authors have shown, from experiments made upon the isolated heart, that there is an output of potassium from the heart substance during vagus inhibition. In the present paper they prove that neither the calcium nor the potassium in the circulating liquid shows any variation in amount, after a perfusion lasting for hours, and after long-continued excitation of the heart through the accelerator nerve.

In regard to nitrogen excretion, they found no evidence of production of purin bases (in which respect heart muscle seems to differ from skeletal muscle), but distinct evidence of creatinin.

J. A. GUNN.

(146) DOES ADRENALIN TRAVEL ALONG NERVE? (Wandert Adrenalin im Nerven?)

MELTZER, *Archiv f. exp. Path. u. Phar.*, Vol. lix., p. 458, 1908.

THIS article contains a detailed criticism of a paper previously published by L. Lichtwitz, in which proof was alleged to have been obtained that adrenalin may travel along a nerve trunk in the same way as tetanus toxin was shown by Hans Meyer and Ransom to do. The author who repeated the original experiments of Lichtwitz failed entirely to confirm his results.

JOHN TAIT.

PSYCHOLOGY.

(147) EXAMINATION OF THE RETENTION OF HEALTHY AND INSANE INDIVIDUALS WITH SINGLE NUMBERS. (Prüfung der Merkfähigkeit Gesunder und Geisteskranker mit einfachen Zahlen.)

C. VIEREGGE (of Buch), *Allg. Ztschr. f. Psych.*, Bd. 65, Ht. 2, 1908.

THE author gives his method of examining the power the individual has of retaining new impressions; he considers that this method is to be recommended on account of its brevity and accuracy. The examination consists of three parts: (*a*) Immediate reproduction of numbers read out (*i.e.* examination of the perceptive faculty); (*b*) reproduction after a pause of one minute without distraction of attention; (*c*) reproduction after a pause of one minute with distraction of the attention by counting on the metronome or by conversation. C. MACFIE CAMPBELL.

EXPERIMENTAL RESEARCHES IN SUGGESTIBILITY. (Recherches Expérimentales sur la Suggestibilité.)

(148) GUIDO GUIDI, *Arch. de Psychol.*, Oct. 1908, p. 49.

THIS investigation was directed to eliciting information as to the influence of suggestion upon school children of various ages. A simple and ingenious method was adopted by which the suggestion of warmth was conveyed without its physical accompaniment. A full description of the apparatus employed is given.

The results obtained are interesting. Arranged according to their class in school the children were found to show greatest suggestibility in the lowest class. The figures gradually diminished as the higher classes were reached. Arranged according to age, it was found that the degree of suggestibility diminished from 50 per cent. at six years to 40 per cent. at seven, rose to 62·5 at nine, and then again gradually fell to 21·4 per cent. at thirteen, rising once more to 33·3 at fifteen. It appears, therefore, that, speaking generally, age and education reduce the degree of suggestibility.

As regards the rapidity with which the subject accepted the suggestion, which it was also possible to test by the method employed, 33 per cent. were rapid, 63½ per cent. moderately rapid, while only 3½ were slow. It may be mentioned that these researches were carried out on girls, and the author expresses his intention to carry them out on boys. JAS. MIDDLEMASS.

VISUAL HALLUCINATIONS IN THE NORMAL STATE. (Hallucinations Visuelles à l'État Normal.)

(149) E. NAVILLE, *Archiv. de Psychologie*, Vol. viii., No. 29 (Oct. 1908), p. 1.

THIS is an account given by M. Naville himself of certain very decided visual hallucinations to which he has at times lately been subject. He is perfectly conscious of all that is going on, and, as a rule, the hallucinations are very vivid. The objects seen vary in character, but most often take the form of persons whom he sees approaching his house. These have their proper proportions to surrounding objects, and increase gradually in size as they approach. He states that he is conscious that what he sees is a hallucination, and so it must possess characters which enable him to differentiate it from real visual sensations. But the association of the two is close and always harmonious. The hallucinations come unbidden and disappear equally without his control. They are accompanied by no other conscious sensation, and it is difficult to understand how he is aware that they are unreal. They give him no distress, and are the occasion only of interesting study to him. The writer is ninety-two years of age, is a member of the Institute of France, and consequently thoroughly competent to describe and analyse his experiences. He has no visual defects except those normal to old age. He states that he has the hallucinations only when he is at his summer residence, which is at a considerable altitude (1200 m.). Occasionally they take the form of illusions, and some are repeated more than once. He has only once had a hallucination when he was in the open air. Weather, relation to meals, and time of day do not influence their occurrence. Detailed examples of various of his hallucinations are given. He states that they seem to him to be due to excitations of memory, and not to stimulation of pure imagination. His suggested explanation of their occurrence is, that as each psychical phenomenon has a corresponding physiological one, if the latter is from any cause called into being the former accompanies it.

JAS. MIDDLEMASS.

PATHOLOGY.

PSEUDO-SYSTEM DISEASES OF THE SPINAL CORD AFTER (150) STOVAIN ANÆSTHESIA. (Pseudosystemerkrankungen des Rückenmarks nach Stovainanaesthesie.)

W. SPIELMEYER, *Neurol. Centralbl.*, Jan. 16, 1909, S. 69.

THE author has found a system degeneration in the spinal cords of apes and dogs experimented on with stovain. There is a degeneration of the posterior columns which must be a posterior root degeneration, since only the exogenous fibres are affected. The primary lesion involves the extra-medullary part of the posterior roots, the disease of the intra-medullary portion being apparently only a result of injury to this part. It would seem that the roots are attacked and destroyed on their way through the subdural space to the spinal cord by the circulating stovain. In addition, a degeneration is met with all round the periphery of the cord. This would appear to be the direct result of the stovain acting on the region with which it comes into closest contact.

EDWIN BRAMWELL.

FURTHER INVESTIGATIONS UPON MENINGOCOCCI AND (151) BACTERIA RESEMBLING THEM. (Weitere Untersuchungen über Meningokokken und meningokokkenähnliche Bakterien.) FRIESE und MÜLLER, *Klin. Jahrb.*, 1908, Bd. 20, S. 321.

A GRAM-NEGATIVE micrococcus having a close affinity in morphological and cultural characters to the meningococcus was isolated from the naso-pharyngeal mucus of certain healthy persons, and of others presenting the clinical features of influenza. The cultural characters of the micro-organism are not fully described, but it is stated that the colonies, as compared with those of meningococci, were for the most part somewhat flatter and had a more undulate margin. The throat coccus fermented glucose and maltose, but not levulose, and no growth was obtained on plain agar medium. The coccus were feebly pathogenetic for white mice and rabbits. Although the coccus closely resembled the meningococcus, tests performed with a specific (meningococcal) polyvalent serum demonstrated a distinct difference between them. The authors conclude that cocci which are obtained from persons not suffering from cerebro-spinal meningitis, and which are not agglutinated by a specific polyvalent serum at 55° C. in twenty-four hours, should not be regarded as true meningococci, even though they closely resemble the latter. W. T. RITCHIE.

CLINICAL NEUROLOGY.

A STUDY OF THOMSEN'S DISEASE. ARTHUR BIRT, *Montreal* (152) *Med. Journ.*, Nov. 1908.

AN interesting feature of this paper is that this study of Thomsen's disease is by a sufferer from it—a feature which has not been presented since Thomsen's classical description of this disease in 1876.

The account of the present condition reveals a patient of forty-five with characteristic station and extremely well-developed muscular system, many of the groups of muscles being those of a trained athlete, although no systematic exercise was ever taken for any lengthened period. Ever since he can remember, he was affected with a painless stiffness and cramp on first attempting any voluntary movement. The disability to "limber up" progressed *pari passu* with the muscular development up to early manhood, after which there was no appreciable change in the condition.

In the writer's case all voluntary movements are more or less affected, and they appear to be affected in proportion to the bulk of the muscular group involved. The contraction of the muscle which the patient wills to move is slower than normal, and, because it relaxes gradually and very slowly, it remains for some seconds more or less contracted; this contraction is so strong that the antagonistic muscles cannot overcome it. Any throwing into action of a new group of muscles, or even any sudden extra-energising of groups already in easy action, *e.g.* walking to running, evokes the tonic cramps. Numerous examples are given. In shaking hands firmly there is often inability to relax the finger flexion quickly, a trifle which may give rise to misconstruction in ordinary social intercourse, and a smile may take on the sardonic type and possibly require explanation.

The rarely involved eye muscles are decidedly affected. Micturition is said to be never affected, but if, in the present case, the stream be stopped by voluntary contraction of the sphincter, the fleeting spasm and slow relaxation are easily appreciated.

As regards the effect of cold, etc., the writer finds himself at variance with some observers, and is convinced that the following factors are important: (*a*) *prolonged rest*—the longer the rest the more severe and prolonged is the tonic spasm; (*b*) *the suddenness and force of the contraction that the patient wills*; (*c*) *mental excitement and emotion—direction of attention to it.* The writer regards the subjective and fleeting sensation of absolute loss of power succeeding the moment of willing as representing the subject's actual appreciation of the delay in the latent period, which some observers state does not occur; (*d*) *cold* aggravates the condition; (*e*) *small doses of alcohol* diminish the severity of the cramp for the time being; (*f*) *fatigue* is a factor, and ensues more rapidly than normal. The writer thinks that this premature onset of fatigue accounts for the commonly expressed but erroneous statement that the muscular strength is not in proportion to the bulk of the muscles.

Myographic tracings, after the method of Hale White, elucidated many phenomena, and clearly showed a very prolonged relaxation curve, while *electrical examinations* demonstrated all the points collectively known as *Erb's myotonic reaction.* The well-formed wave-like contractions proceeding slowly from the cathode to the anode, with the stabile application of a galvanic current, were easily elicited, while strong faradic currents produced marked and sluggish contraction persisting after the cessation of the current.

Fragments of muscle excised from the vastus externus showed the following points, viz.:

(*a*) A marked increase in size, especially in breadth of many individual fibres.
(*b*) Indistinctness of striation and waviness of outline of fibres.
(*c*) An apparent increase of the nuclei of the sarcolemma.

(*d*) An absence of interstitial changes and vacuolation (as described by Erb).

Many who have written on the subject consider the disease to be "solely one of the muscular system," but Thomsen's own view seems to have been that the affection was a neurosis, while the writer is convinced that the nervous system plays a more important rôle than is to-day usually conceded. He thinks that the disease is primarily a congenital functional defect in the mechanism of inhibition. An interesting tree is given showing the incidence of the disease and other neuroses in the family group. One sister suffers from traces of it, and one sister (deceased) showed it in a severe general form, while two maternal cousins (both males) suffer from it. W. KELMAN MACDONALD.

VOLKMANN'S ISCHÆMIC PARALYSIS. ALFRED S. TAYLOR,
(153) *Ann. of Surg.*, Sept. 1908.

TAYLOR reports a case of Volkmann's ischæmic paralysis which he treated by freeing the median and ulnar nerves from the pressure exerted by the cicatrisation of the flexor muscles in the forearm, and by resecting 2 cm. of bone from the radius and ulna, so that simultaneous extension of wrist and fingers was possible in the shortened forearm. Considerable improvement in the condition of the hand and forearm followed. Taylor also analyses the reported cases and current views on the subject, and summarises as follows:—Ischæmic paralysis is essentially a myositis, resulting from prolonged absence from the muscle of oxygenated blood. Muscle substance is replaced by fibrous tissue in proportion to the severity of the case, with a corresponding degree and rigidity of contracture.

The nerves are frequently involved, either primarily from the ischæmia and pressure, or, secondarily, from compression by the cicatricial mass. This form of paralysis occurs, nearly always, in the forearm after too tight dressings have been applied to fractures near the elbow. The great majority of cases occur in children from three to twelve years old. Severe cases may result from six hours of tight compression.

Diagnostic Symptoms.—Early onset of severe pain and swelling, simultaneous appearance of rigid contracture with the paralysis of muscles, causing the characteristic "claw-hand."

Treatment.—When the lesion occurs, dressings must be removed, the fracture neglected for the time being and attention paid solely to the return of muscle nutrition and function. Non-operative treatment consists in the use of massage, electricity, vigorous passive motion, etc. Operative treatment may take the form of lengthening of the tendons of the shortened muscles or resection of both portions of bones of the forearm, a simpler and probably better operation. After-treatment must be vigorously and systematically applied, in the form of "physical therapeutics" of all kinds.

Complete cure is rare; improvement comes only after months or years of steady work. J. W. STRUTHERS.

TABES QUESTIONS. (Tabesfragen.) H. KRON, *Monatsschr. f. Neur.* (154) *u. Psychiat.*, Dec. 1908, Bd. 24, S. 479.

KRON gives here some useful figures concerning 482 cases of tabes he has personally examined. Questions such as age of onset, incidence in various trades, frequency of different symptoms, sterility of the women, are dealt with, and the generally accepted conclusions confirmed. The main object of the investigation, however, was to study the relation between previous mercury treatment and the onset of the disease. In a previous article by Kron, and in two by Schuster and Collins, the anti-Fournier standpoint is taken as to the inefficacy of previous treatment. Kron has now carefully investigated his cases with respect to the extent and nature of previous treatment, and finds that the more extensive the treatment the earlier is the date of onset of the tabes. He considers that treatment in no way prevents the later occurrence of tabes. ERNEST JONES.

SOME AMYOTROPHIES IN TABES OF SYPHILITIC ORIGIN. (155) (Comme quoi certain amyotrophies du tabes reconnaissent une origine syphilitique.) LHERMITTE, *Semaine méd.*, dec. 23, 1908, p. 615.

MUSCULAR atrophy in tabes is due to three causes: (1) joint lesions, (2) peripheral neuritis, (3) a syphilitic degeneration of the motor cells in the anterior horns, with or without muscular lesions. That is a progressive muscular atrophy of the Oran-Duchesne type occurring at the same time as the tabes and due to the same cause —namely, syphilis.

The author is led to this conclusion clinically, because in a certain number of atrophies met with in tabes, the progress is fast, the process tends to be symmetrical, and it shows no correspondence with the ataxy; the muscles usually affected are those of the trunk and scapula, sometimes the tongue; they show fibrillary contraction and the reaction of degeneration. He quotes a number of examinations made in cases of this kind, where such a degeneration of the motor cells was found. He suggests that in such cases antisyphilitic treatment may stop the progress of the muscular atrophy. R. W. Lang Todd.

SUMMARY OF AN EPIDEMIC OF 135 CASES OF ACUTE (156) ANTERIOR POLIOMYELITIS OCCURRING IN VICTORIA IN 1908.

H. Douglas Stephens, *Intercolonial Med. Journ. of Australasia*, Vol. xiii., Nov. 20, 1908, p. 573.

Extensive epidemics of this disease have from time to time been reported in different parts of the world, the latest being those in Queensland in 1905, in Norway and Sweden in 1906, and in New York in 1907. In this paper an interesting summary is given of 135 cases observed during the earlier half of last year in Victoria (Australia).

Most of the cases occurred in the densely populated parts of Melbourne and in small houses, but the hygienic conditions were not very bad. No relationship was observed to undue prevalence, or absence, of any other disease, nor was any similar affection noticed among the lower animals. The epidemic occurred chiefly in April, May, and June (the Australian autumn), and it followed an unusually dry summer, in which there had been great scarcity of water. The disease seemed to be contagious in a very mild degree, a family predisposition was sometimes noted, and recurrence or recrudescence was occasionally observed in the same child. Dr Stephens believes that the incubation period is between three and sixteen days in duration, and that the stage of invasion may vary from zero to a week, but is usually from twenty-four to seventy-two hours.

The bacteriological examination of the cases was somewhat hampered by want of adequate appliances. No organism was found that could be proved to be of etiological importance; some interesting observations were, however, made. Lumbar puncture was done in twenty-six recent cases. In most of these a lymphocytosis was found along with some polynuclear cells, but in some instances there were no cellular elements at all. From seven of the cases cocci were grown; and similar cocci were seen in stained films of the centrifuged fluid. These organisms resembled the faintly-staining diplococci which Geirswold described in the Norwegian epidemic.

In the great majority of the cases the clinical picture was that associated with ordinary anterior poliomyelitis. In a few, however, the symptoms indicated the presence of polioencephalitis. In some of these the cells of the cerebral cortex seemed to be affected, in others those of the basal ganglia. The cranial nerves affected were the 3rd, 6th, 7th, and 12th, and possibly, in one case, the spinal accessory. In one instance the cerebellum appeared to be the part implicated. Sometimes the paralysis was widespread, and a condition existed analogous to Landry's paralysis.

In nearly every case there was some premonitory fever; this was rarely above 101·5° F., and did not last more than three days. In one case it reached 106° F., and once it lasted for a fortnight. Usually the fever subsided before the paralysis appeared. General irritability, restlessness, drowsiness, twitching during sleep, and even delirium were observed during the pyrexia. Sometimes convulsions ushered in the attack, and slight passing vomiting, or slight cough, were common initial symptoms. Naso-pharyngeal symptoms were also common; but bacteriological examination of the naso-pharynx, in a few cases, gave no positive results. Pain, generally accompanied by tenderness, was often met with, and sometimes lasted for weeks, or even months. Occasionally general dulling of the sensation, or perhaps paræsthesiæ or thermalgesia were present. Constipation was very common and persistent. It seemed often to be due to a hypotonic condition of the rectum and sphincters. Diarrhœa was rare, and incontinence of fæces was never observed. Dysuria and retention of urine were often met with, and in one case incontinence. The urinary symptoms were usually recovered from within a week. Vaso-motor disturbances (chilliness and slight œdema) were found in very varying degrees in otherwise similar cases. In the cases where the vaso-motor symptoms were severe the muscular wasting was generally very great. Generally, although not always, these cases did badly. Most of the children affected had previously been in good health. The death-rate of the epidemic was approximately 4½ per cent.

Dr Stephens' pathological examinations confirmed the results obtained by Harbitz and Scheele in the Norwegian epidemic, who found patchy lepto-meningitis, especially on the front of the cord in the neighbourhood of the deeper lesions. The engorgement of the small vessels and absence of the large cells in the anterior cornua were regarded as probably secondary to the meningeal lesion. Sections stained for micro-organisms gave no result.

JOHN THOMSON.

MENINGEAL INFECTION WITHOUT MENINGITIS. (Infection méningée sans méningite.) P. MENETRIER and R. MALLET,

(157) *Bull. et mém. de la soc. méd. des Hôp. de Paris,* 1909, p. 15.

A MAN, aged 75, was admitted to hospital with meningeal symptoms. The illness had started only a few days previously.

Lumbar puncture gave issue to a clear fluid under hypertension, containing a large quantity of albumin. The cellular elements were very scanty, and chiefly lymphocytes with a few polymorphs and endothelial cells. The micro-organisms, on the other hand, were very numerous, and proved to be enterococci. The patient remained in a comatose condition, and died on the night following admission. The autopsy showed chronic nephritis, bronchopneumonia, cardiac hypertrophy, and a fatty liver. Enterococci were found in the pia mater over the cortex, medulla, and lumbar enlargement, but nothing else abnormal was detected on naked eye and microscopical examination of the brain and cord. The infection of the meninges was probably secondary to bronchopneumonia. The patient's advanced age and numerous visceral lesions were the probable explanation of the failure of organic defence (*cf. Review of Neurology and Psychiatry*, 1909, p. 110).

J. D. ROLLESTON.

SCARLATINAL MENINGITIS. (La méningite scarlatineuse.)

(158) A. GOUGET and R. BÉNARD, *Bull. et mém. de la soc. méd. des Hôp. de Paris*, 1908, p. 853. LERMOYEZ, *ibid.*, p. 867.

A GIRL, aged 14, in convalescence from a mild attack of scarlet fever, developed secondary adenitis, nephritis, and double otitis media. Vomiting, headache, Kernig's sign, and delirium ensued, followed by strabismus, nystagmus, and coma. Temperature 107·6°. Death occurred in the ninth week from the onset of scarlet fever. Lumbar puncture performed six days before death gave issue to a turbid fluid under hypertension containing 81 per cent. of polymorphs and 19 per cent. of mononuclears, with intra- and extra-cellular streptococci. 10 c.c. of electrargol were injected after lumbar puncture the next day, and three days later the cerebro-spinal fluid was more turbid. The polymorphs were now 55 per cent. and the mononuclears 45 per cent. The autopsy showed suppurative cerebro-spinal meningitis. No direct propagation between the middle ear and the meninges could be found.

Suppurative meningitis is a rare complication of scarlet fever. It may occur in the second week, but usually does not develop till later. The clinical picture may be complete or be reduced to a progressive coma. The duration may range from forty-eight hours to sixteen days. In the diagnosis uræmia must be excluded. The lesions may be circumscribed or diffuse.

Streptococci are usually the causative organisms, as is the rule in the secondary suppurations of scarlet fever, but sometimes staphylococci and pneumococci are found. In the discussion Lermoyez insisted on the invariably fatal issue of otogenic meningitis of streptococcal origin.

J. D. ROLLESTON.

SCARLATINAL MENINGITIS. A. E. FFROST, *Intercol. Med. Journ.* (159) *of Australasia*, 1908, p. 690.

A GIRL, aged 3 years, in the second week ot scarlet fever, developed a squint, twitching of the forehead, and retraction of the head. Other signs of meningitis developed. Nystagmus and double optic neuritis were well marked. Examination of the urine and the ears was negative. Recovery took place. Lumbar puncture does not seem to have been performed.

J. D. ROLLESTON.

STREPTOCOCCAL CEREBRO-SPINAL MENINGITIS IN SCARLET (160) FEVER. (Méningite cérébro-spinale à streptocoques au cours de la scarlatine.) TEISSIER, BOUDON, and DUVOIR, *Bull. et mém. de la soc. méd. des Hôp. de Paris*, 1908, p. 868. A. NETTER, *ibid.*, 1909, p. 11.

A MAN, aged 20, on the eighteenth day of a mild attack of scarlet fever, showed the multiple symptoms of secondary infection not infrequently observed in convalescence, viz., sore throat, rheumatoid pains, gastro-intestinal disturbance, oscillating pyrexia, and rapid pulse. After ten days' duration these symptoms were replaced by signs of meningeal localisation. Lumbar puncture gave issue to a turbid fluid containing numerous streptococci and polymorphs, with a few mononuclears. Death occurred, preceded by left-sided epileptiform convulsions and hemiplegia. At the autopsy the cerebro-spinal meninges were congested. A purulent exudate extended from the convexity of the right cerebral hemisphere to the base of the brain. The cranial bones, especially the ethmoid and petrous portion of the temporal, were intact. In this case the streptococci were carried to the meninges by the bloodstream, instead of penetrating in the usual way through the petrous portion of the temporal or the ethmoid. There are only seven other cases in literature of primary suppurative meningitis in scarlet fever, most of which occurred in children. Netter is not so pessimistic as Lermoyez in his prognosis of streptococcal otogenic meningitis. Out of eight such cases he had one recovery, and in three cases he was able to prolong life appreciably by lumbar puncture. The successful case was that of a girl, aged seven years, in whom meningitis was secondary to double otitis following measles. A purulent fluid containing numerous streptococci was obtained by lumbar puncture. Recovery was complete, and the child, when seen several years later, showed no sequelæ.

J. D. ROLLESTON.

TYPHOID MENINGITIS: CULTIVATION OF BACILLUS TY-(161) PHOSUS FROM MENINGES AND MESENTERIC LYMPH NODE IN A CASE OF GENERAL PARESIS, WITH NOTE ON EXPERIMENTAL TYPHOID MENINGITIS IN THE GUINEA-PIG.

E. E. SOUTHARD and E. T. F. RICHARDS, *Journ. Med. Research*, Dec. 1908, p. 513.

A MAN who had contracted syphilis at nineteen developed general paralysis at thirty, and died at thirty-two, after one week's acute illness. The autopsy confirmed the diagnosis of general paralysis. Apart from enlargement of the mesenteric lymph glands, there was no anatomical sign of typhoid, but cultures from an enlarged mesenteric gland and the cerebro-spinal fluid yielded colonies of B. typhi. The meningeal exudate contained large numbers of polymorphonuclears. Orbital injection of the typhoid organisms into guinea-pigs produced acute meningitis, from which numerous colonies were cultivated. Within five days the exudate contained many polymorphonuclears, and on the seventh day from inoculation mononuclears appeared. J. D. ROLLESTON.

TREATMENT OF MENINGOCOCCIC MENINGITIS WITH THE (162) FLEXNER SERUM.

F. S. CHURCHILL (of Chicago), *Journ. Am. Med. Ass.*, July 4, 1908.

CHURCHILL has treated eleven patients with the serum. Seven recovered, four died. Of those that died, one was of the fulminating type, another was moribund on admission. He concludes that these results in connection with those reported by Flexner and other investigators are remarkable. One is impressed with the astonishing changes that come over these patients after even one, two, or three injections of the serum. Enough has been done already to warrant its use on a wide scale. C. H. HOLMES.

THE SERUM TREATMENT OF EPIDEMIC CEREBRO-SPINAL (163) MENINGITIS.

C. H. DUNN (of Harvard), *Journ. Am. Med. Ass.*, July 4, 1908.

THE paper is based on a study of forty consecutive cases which showed the presence of the diplococcus intra-cellularis in the cerebro-spinal fluid, no regard being paid to the type of case or stage of the disease. The anti-serum of Dr Flexner was used in all cases, and injected into the spinal canal according to the technic recommended by Dr Flexner. Of the forty patients treated, nine died and thirty-one recovered; twenty-nine recovered completely. This is a mortality of 22·5 per cent. The average mortality, collected by the author from various hospital records, has been between 70 per cent. and 80 per cent. Cloudiness of the spinal fluid is an indication for the immediate use of the serum, whatever organism it is found to contain. The routine dose was 30 c.c., the maximum 45 c.c. Where the improvement was marked and rapid no further injection was given. When this did not occur it was repeated daily until all nervous and subjective symptoms were completely relieved, or until four doses had been given. The principal effects of the serum were: (1) to produce a fall of temperature; (2) to produce a rapid improvement in the patient's general condition, accompanied by a more or less marked relief of symptoms; (3) to cut short the course of the disease.

The author's conclusions are:—

(1) The use of the Flexner anti-serum is of great value in epidemic cerebro-spinal meningitis. He believes its value to be comparable to that of diphtheria anti-toxin in diphtheria.

(2) The use of the serum at times aborts the disease, frequently rapidly relieves its symptoms, shortens its course, lessens the liability to sequelæ, and greatly reduces its mortality.

(3) The serum should be used as early as possible in all cases, even of suspected epidemic meningitis.

(4) It should be frequently repeated as long as there are symptoms or any tendency to relapse.

(5) Late chronic cases are unfavourable for the use of serum, but any case in which the diplococci are present has some hope of relief by its use.

C. H. Holmes.

THE RESULTS OF THE BACTERIOLOGICAL, CYTOLOGICAL (164) AND CHEMICAL EXAMINATION OF THE LUMBAR PUNCTURE FLUID OF 37 CASES OF EPIDEMIC CEREBRO-SPINAL MENINGITIS TREATED BY KOLLE-WASSERMANN'S SERUM. (Die Ergebnisse der bakteriologischen, cytologischen und chemischen Untersuchung der Lumbalexudate von 37 Genickstarrekranken unter dem Einfluss Kolle-Wassermannschen Meningokokken Serum.)

Hohn, *Klin. Jahr.*, Bd. 20, 1908, S. 357.

The author examined the lumbar puncture fluid from thirty-seven cases of epidemic cerebro-spinal meningitic treated by Kolle-Wassermann's serum, and draws the following conclusions regarding the action of the serum:—

1. After each injection of serum, the number of meningococci visible in films lessens; the diplococci present signs of degenera-

tion, and after the third injection the micro-organisms can no longer be detected.

2. After one injection of serum the meningococci may still be detected in a few cases, but after the second injection all attempts to cultivate the meningococcus are attended with failure.

3. Simultaneously the cytological character of the exudate undergoes a change. The cells of connective tissue origin (adventitia cells of Marchand and of Speroni; large mononuclear cells of other writers) are the first to disappear, then the polymorphonuclear leucocytes diminish in number, and lymphocytes now appear. It is these which eventually predominate. This change is completed in a few days.

4. The albumin content of the exudate falls steadily, and in a short time has returned to the normal. The fall is sometimes preceded by a slight and transient rise following the first injection.

5. These results indicate that the serum should be injected intraspinally and as early as possible. The initial dose for a child is 20 c.c., each subsequent dose being 30 c.c., while the corresponding doses for an adult are 30 and 40 c.c. The injections should be given at short intervals, not exceeding twenty-four hours, over a period of several days. W. T. RITCHIE.

THREE OTOGENIC BRAIN ABSCESSES. (Drei otogene Hirnabszesse.)

(165) OSKAR LEVY, *Arch. f. Ohrenhlkde.*, Bd. 78, S. 35.

THE first case was that of a girl æt. 2½, who was sent to Dr G. Brühl, with discharge from the left ear. The following day there was a sudden rise of temperature to 40·4°, and of pulse to 120. The child was dull, and there was some stiffness of the neck; there was loss of conjugate deviation of the eyes to the right, no nystagmus, paresis of the right arm and leg, continual spasms of the left arm and leg, and paresis of the right facial nerve. On lumbar puncture clear fluid escaped under high pressure; there was observed on both sides choked disc. Schwartze's operation was performed and the dura exposed, and the temporo-sphenoidal lobe explored; pus was evacuated. The symptoms all began to disappear, but on eighth day there was a sudden return of the symptoms and of the fever—temp. 39·4°; the dural incision was enlarged and abundant pus escaped. After that healing was uneventful. The right-sided facial paralysis, however, remained.

The second case was that of a man, æt. 20, who had suffered for years from right-sided otorrhœa. He was first seen four days before he died. Ten days previously headache and dizziness had supervened, and there were two rigors. Temperature, 38·8°; pulse,

120. Nystagmus to the left. Fundus showed dilated veins; edge of disc blurred. In right auditory, meatus granulations.

A radical mastoid operation was performed (Dr Brühl). The sinus was exposed and punctured; it bled freely. The patient became worse. The left arm became paralysed and the left leg paresed, and also the left side of the face; a left-sided homonymous hemianopia was also discovered. A second operation was performed and the temporo-sphenoidal lobe explored; fœtid pus escaped. The patient died on the fifth day. The sectio showed a small temporo-sphenoidal abscess and a leptomeningitis confined to the right side.

The third case was that of a patient suffering from right-sided otorrhœa. He had been operated on for supposed temporo-sphenoidal abscess, which was not discovered. After death the brain was sent to Dr Brühl for examination. An abscess was found in the cerebellum. W. G. Porter.

THE PROGNOSIS OF OTITIC BRAIN ABSCESSES. (Die Prognose (166) des otitischen Hirnabszesses.) B. Heine, *Beit. zur Anat., etc., d. Ohres.*, 1908, Bd. 2, S. 153.

Heine observed 40 cases of brain abscess in Berlin between May 1894 and March 1906. Twenty-eight were operated upon, and 12 were found at the sectio. In 22 cases the abscess was in the temporo-sphenoidal lobe. Six cases were cured, *i.e.* 15 per cent. This at least shows that the prognosis is unfavourable.

Death may result either from the abscess alone or from a complication arising from it, or from another cerebral complication of the middle-ear suppuration, or from a disease independent of the abscess of the ear condition.

In Heine's cases the six which recovered were uncomplicated. In nine the abscess which had been opened, or another abscess, was the cause of death. Ten cases were complicated by purulent meningitis. Four cases were complicated by lateral sinus thrombosis. W. G. Porter.

INTRACRANIAL LESIONS CONSECUTIVE TO NASAL AND (167) ACCESSORY SINUS INFECTIONS. Cornelius G. Coakley, *Journ. Amer. Med. Ass.*, Jan. 9, 1909.

This paper forms one of a series on the intracranial complications of diseases of the ear, nose, and accessory sinuses. It contains nothing new on the subject of the paths of infection or the methods of treating meningitis, extradural and cerebral abscess, and thrombosis of the cavernous and other blood sinuses. The author has operated on over two hundred cases of frontal sinus suppuration by the external route, and has only found necrosis of the posterior wall of the sinus in three cases, of which two were syphilitic. For the exploration of the ethmoidal and sphenoidal sinuses the external route is recommended. J. S. FRASER.

ON HYSTERICAL PAROXYSMAL ŒDEMA. F. H. EDGEWORTH,

(168) *The Quarterly Journal of Medicine*, Vol. ii., No. 6, Jan. 1909, p. 135.

ANGIONEUROTIC œdema is a nomenclature used with an indiscriminate application. The term is usually applied to the disease, the prominent features of which were described by Quincke in 1882. This form is often hereditary. The œdema is circumscribed, and may occur in any part of the body. Death sometimes results from œdema of the larynx. The author points out that Quincke's disease appears to be closely allied to Henoch's purpura.

Hysterical chronic œdema was first described by Sydenham in 1682, and later by Charcot and his pupils, and this affection is generally superimposed upon some other hysterical manifestation, such as arthralgia, paralysis, or contracture. The œdematous region is white, pink, or bluish in colour, is hard, and invades the whole circumference of the affected part. It generally lasts a long time, *e.g.*, two years, is subject to fluctuations in intensity, and when it disappears does so suddenly.

The author separates a group of cases, narrating the history of seven examples which resemble Quincke's œdema in its paroxysmal characters, the hysterical chronic œdema of Sydenham and Charcot, on the other hand, in its hysterical origin. He suggests, in other words, that cases of paroxysmal œdema may be subdivided into two groups, Quincke's œdema and hysterical paroxysmal œdema, the former being probably due to some blood change, the latter to some disturbance in the central nervous system. "The similarities between paroxysmal and chronic œdema lie in the geometrical distribution, in the firmness of the œdema, and in the frequently associated disturbances of sensibility. The differences are that in the paroxysmal variety—if one may judge from an experience of only seven cases—the phenomenon is not usually superimposed on some other manifestation, and is of transitory and often of a recurring nature. Cases, he states, occur which are transitional between the two varieties, *e.g.*, in the last case the attacks varied in duration from two days to thirteen weeks. Thus it is easy to distinguish paroxysmal from chronic hysterical œdema. It is, however, difficult, and impossible at first in some cases, to distinguish between the former condition and that which is sometimes called angioneurotic œdema."

The diagnosis between Quincke's œdema and the hysterical paroxysmal œdema depends on recognition of the extent and form of the recurring firm œdema, and of its associated phenomena. In hysterical œdema the area affected is a "geometrical" one; its edges are abrupt, and the infection is often accompanied by disturbances of sensibility, but not by gastro-intestinal crises. Diagnosis would be impossible if the only phenomena of a first attack were œdema of the face, *e.g.*, eyelids or lips. One would have to wait until other skin areas were affected, or until visceral manifestations occurred. EDWIN BRAMWELL.

ON A CASE OF HYSTERICAL DREAM STATE WITH RETROGRADE AMNESIA.

(169) **(Ueber einen Fall von hysterischem Dämmerzuständ mit retrograder Amnesie.)** MATTHIES (of Dalldorf), *Allg. Ztschr. f. Psych.*, Bd. 65, Ht. 2, 1908.

THE patient, a woman at the end of the third decade of life, seven months pregnant, was brought to the asylum after attempted suicide. She was in a dream state. On recovery from this state she had an amnesia for the whole of her past life, with extremely few and fragmentary reminiscences; the amnesia persisted under hypnosis. After five years a clue to her identity was found; the mental disorder had occurred in relation to the pregnancy, which, owing to the complicated nature of her relations, was very embarrassing to her.

The difficulty of diagnosing a true amnesia from a simulated amnesia is discussed in detail, as the patient had some ground for not caring to recognise the actual facts; the presence of well-marked hysterical stigmata and the consideration of the whole personality of the patient led the author to consider the amnesia genuine. C. MACFIE CAMPBELL.

A CASE OF DESERTION IN A HYSTERICAL DREAM STATE.

(170) **(Ein Fall von Fahnenflucht im hysterischen Dämmerzustände.)** GERLACH (of Hildesheim), *Allg. Ztschr. f. Psych.*, Bd. 65, Ht. 4, 1908.

THE case is reported in detail and the question of simulation discussed. C. MACFIE CAMPBELL.

ON THE ETIOLOGY OF CREPUSCULAR STATES. (Zur (171) Aetiologie der Dämmerzustände.) Voss (of Greifswald), *Zentralbl. f. Nervenh. u. Psych.*, Ht. 18, 1908.

THE author reports two cases of the occurrence of a crepuscular state in alcoholic patients, in whom, apart from the episode itself, there was no ground for the diagnosis of hysteria. He considers that such an episode may to a certain extent be looked on as the equivalent of a delirium tremens. C. MACFIE CAMPBELL.

PALPEBRAL GANGRENE AND OTHER OCULAR COMPLICA- (172) TIONS OF VARICELLA. J. D. ROLLESTON, *Med. Chron.*, Jan. 1909, p. 215.

AFTER recording the ocular complications which occurred in 13, or 8·6 per cent. of a series of 150 cases of varicella, the writer reviews two cases of neurological interest described respectively by Marfan and Chavernac. The latter has already been abstracted in this *Review* (1908, p. 618). In Marfan's case severe varicella in a girl aged 22 months was followed by bilateral ptosis, divergent strabismus, and abolition of all the ocular movements except abduction. Reaction to light and accommodation was preserved, and vision and the fundi were normal. The condition was attributed to polioencephalitis of the floor of the aqueduct of Sylvius producing nuclear palsy of both trochlear nerves and of the oculo-motor root supplying the levator palpebræ superioris and other extrinsic muscles. Anti-syphilitic treatment, which was at first adopted, had no effect, and galvanism of the lids and nux vomica internally were substituted. Within a few months considerable improvement resulted, and only a slight degree of sluggishness in the levatores palpebrarum was left. The writer does not regard these nervous phenomena as a mere coincidence, for which varicella was not responsible, since, in the first place, no other infection was present; and secondly, though less frequently followed by nervous sequelæ than any other infectious disease, varicella has been causally connected with other nervous complications, *e.g.* infantile hemiplegia, disseminated sclerosis, chorea, peripheral neuritis, and neuro-myositis (*Rev. of Neur. and Psych.*, 1907, p. 564). "A striking parallel may be found in gonorrhœa, whose ætiological importance in neurology is yearly becoming more evident, though until recently it was, like varicella, regarded as a comparatively trivial disorder." AUTHOR'S ABSTRACT.

A CASE OF SCLERODERMIA AND ADDISON'S DISEASE, WITH (173) REMARKS ON THE PHYSIOLOGY AND PATHOLOGY OF THE SYMPATHETIC AND SUPRARENALS. (Über einen Fall von Sklerodermie und Morbus Adisonii, etc.) L. LICHTWITZ, *D. Archiv für klin. Med.*, Bd. 94, H. 5 u. 6, S. 567.

THIS is an interesting case of a woman of 35, whose hands first showed a condition like erythromelalgia, then of Raynaud's disease. Within two years she had a condition of sclerodermia, affecting principally the arms, neck, face, and upper part of trunk. At the same time typical symptoms of Addison's disease developed, from which she died. Post-mortem the suprarenals showed little change beyond some increase of connective tissue. Between them and the semi-lunar ganglia there was a tough mass of fibrous tissue with hyaline plaques. The ganglia themselves contained much dense fibrous tissue, the cells being wide apart, very small, and mostly without any nucleus. In the sympathetic trunk the fibres appeared normal; it was surrounded by dense fibrous tissue, with hæmorrhages in it; the ganglia presented an appearance much like that of the semi-lunars.

The author gives a good review of the literature. Only seven cases, it appears, of sclerodermia associated with Addison's disease have been reported. He has an interesting, but, admittedly, still partly hypothetical explanation of these conditions; the essence of it being that adrenalin is conducted by nerve trunks, and has a special affection for the sympathetic, and to its action in varying amounts and at varying rates most of the symptoms recorded in this case can be attributed. J. H. HARVEY PIRIE.

ON THE COMBINATION OF IDIOPATHIC CUTANEOUS (174) ATROPHY AND FOCAL SCLERODERMIA. (Über das Kombinationsbild der idiopathischer Hautatrophie und herdformigen Sklerodermie.) NOBL, *Archiv f. Derm. und Syph.*, 1908, p. 323.

THE author reports a case of a peculiar skin eruption in a girl of 14. The eruption was localised to the right side of the back, extending from the neck above to the 6th rib below, and stopping short at the middle line. In the early stages it was associated with burning pain. At the upper part of the affected area were several small atrophic scar-like areas. Below this was a large area where the skin was livid red, atrophic, wrinkled and transparent-looking. In the centre of the area were hard, tumour-like masses, which were pale yellow in colour, smooth and dense, and evidently affecting all the thickness of the true skin. Microscopic examination was made of the different lesions, and the author is of opinion that the raised, hard masses were localised areas of scleroderma, whilst the atrophic areas were probably due to a primary idiopathic atrophy of the skin. The question as to the possibility of the atrophic areas being the result of a previously sclerosed condition of the skin is discussed, but thought to be improbable, both from the histological findings and the course of the case, which was under observation several months. Post-atrophic thickenings of the skin, sometimes seen in idiopathic skin atrophy, were also excluded. Nobl thinks that scleroderma and idiopathic skin atrophy are diseases which are closely allied, inasmuch as the change in both conditions is chiefly in the connective tissue, and that the same causes, acting on similar tissues, may lead on the one hand to an atrophy with diminution of fibrous tissue, and on the other hand to a localised scleroderma with increased fibrous overgrowth. R. CRANSTON LOW.

FACIAL PARALYSIS: A STUDY OF THREE HUNDRED AND (175) THIRTY-FIVE CASES.

G. A. WATERMAN, *Journ. of Nerv. and Ment. Dis.*, Feb. 1909, p. 65.

THE data upon which this paper rests are gathered from 335 cases of facial paralysis, for the most part seen at the out-patient department of the Massachusetts General Hospital. The majority were personally examined by the author. All cases due to ear disease, fracture of the base, cerebral syphilis, tumours and glands were excluded. Combining the series of cases published by Gowers, Bernhardt, Hübschman, and Sossinka with his own, the author finds that among 968 cases, 52 per cent. were males and 48 per cent. were females. Of his 335 cases the right nerve was affected 163 times, the left on 157 occasions, while in two instances both were involved.

The original observation of Minkowski that the process is of a parenchymatous nature, similar to that found in toxic forms of neuritis, has been repeatedly confirmed, and the question is asked by the author, what are we going to accept as predisposing factors?

An hereditary neuropathic taint has been maintained by Neumann, who, among 37 patients, found a record of nervous disease in the near relatives of 24. In five of his cases facial paralysis had occurred in other members of the family, and in one three sisters had suffered. Many inquiries on this point have led the author to believe that neuropathic relatives are no more frequent in families of those affected with facial paralysis than are found in families taken at random.

Fright has been suggested as a possible cause. Thus in one case facial palsy appeared in a woman the day after her child fell from her arms; in a second instance, the day after the patient had been run away with by a horse; while in a third it followed the shock of a sudden death in the patient's family. It is probable that coïncidence accounts for this apparent association.

Reik considers the ear of importance in the etiology of the neuritic form of facial palsy. He examined 12 cases, 10 of which had initial aural pain, and found positive evidence of middle ear disease in all. In 22 cases sent by the author to an aural surgeon, within seven days of the onset of the paralysis the middle ear was normal in 19, while in 3 there was a mild degree of congestion.

As favouring the view that the action of toxic substances on the nerve may play an important rôle, the author refers to three reported cases in which a toxic retrobulbar neuritis appeared at a later date.

A history of exposure to cold is too frequent to be explained by coincidence. The author's statistics clearly demonstrate that attacks of facial paralysis do not occur more frequently at any particular time of the year, and he concludes with Bernhardt that although exposure may precipitate an attack, the real cause lies in the lessened power of resistance in the individual.

The explanation of recurrent attacks and of several cases appearing in the same family is probably to be found in some anatomical predisposition, or in the former instance in a lowered resistance to the toxic substance which causes the attack. Petit has recently analysed the reported cases of recurrent facial palsy.

The author's statistics indicate that between the ages of forty and sixty severe attacks are more frequent.

That severity of the initial pain is no indication of the severity of the palsy is another point which these statistics demonstrate. The author's experience has convinced him that treatment by galvanism plays no part in the causation of the hemi-spasm which is no uncommon sequel of a facial palsy. Theoretical considerations as to the cause of contractures are discussed.

Edwin Bramwell.

(176) **THE AMOUNT OF ALBUMEN CONTAINED IN, AND LYMPHOCYTOSIS OF, THE CEREBRO-SPINAL FLUID IN INFANTS SUFFERING FROM INHERITED SYPHILIS. (Der Eiweissgehalt und die Lymphozytose des Liquor cerebrospinalis bei Säuglingen mit Lues Congenita.)** LEO BARON, *Jahrb. f. Kinderheilk. u. physische Erziehung*, Jan. 1909.

IN his introduction to this article Baron refers to the findings of various French and German authorities who have devoted attention to the cerebro-spinal fluid in syphilitic affections. Fuchs and Rosenthal have collected 403 cases of syphilitic affections of the nervous system, and found lymphocytosis in 94 per cent., while in 272 cases of nervous disease not syphilitic in only 6 per cent. was there any lymphocytosis. Further researches showed a lymphocytosis in cases of inherited syphilis, but not so constantly. The author has undertaken his researches in the hope that examination of the cerebro-spinal fluid might help in the early diagnosis of inherited syphilis.

He goes on to describe minutely the method of procedure in performing lumbar puncture. He has the patient in the sitting posture, and collects 4 c.c. of the fluid in a centrifuge tube recommended by Nissl. He centrifuges for one hour at from 1800-2000 revolutions per minute, draws up the deposit in a capillary pipette, and divides it into three parts. He fixes the preparations in alcohol and ether, or by gently heating in the flame. He stains with Romanowsky's methylene blue and eosin, sometimes with Giemsa's stain. He estimates the albumen by adding Esbach's reagent to the contents of the Nissl's tube, and centrifuges for half an hour.

He has examined forty-nine cases in all, and divides them into six groups:—

(1) 23 certain cases of inherited syphilis.
(2) 6 cases of suspicious syphilis.
(3) 4 cases of hydrocephalus and 1 case of idiocy in infants without further suspicion of syphilis.
(4) 2 children with acquired syphilis.
(5) 4 idiots without syphilis.
(6) 10 healthy children.

He gives the history, treatment, and progress of all these cases, and then goes on to discuss the results of his examination of the fluid obtained. In the case of the children certainly suffering from inherited syphilis, in thirty-three punctures the albumen and lymphocytes were both increased twelve times, both were not increased eleven times, there was an increase of albumen without lymphocytosis three times, and seven times the reverse condition. He finds that on an average there is a greater amount of albumen with lymphocytosis than without it, but there is no constant relation between the amount of albumen and the lymphocytosis. In the majority of cases of inherited syphilis there is an increase of lymphocytes, but a negative finding in no way contra-indicates syphilis. Even a positive finding does not prove the case to be syphilitic.

He draws the following conclusions:—

1. Lumbar puncture gives no more information than clinical examination.
2. The establishment of the amount of albumen present tells us nothing definite.
3. An increase in the number of lymphocytes does not signify that the case is one of syphilis, nor is a diminution in the number of lymphocytes of any significance.
4. In no way does lumbar puncture assist us in the early diagnosis of inherited syphilis. Perhaps the new serum reaction may help us in this respect.

R. J. MACKESSACK.

PSYCHIATRY.

SERUM DIAGNOSIS IN PSYCHIATRY. (Du Séro-diagnostic en (177) Psychiatrie.) A. MARIE, *Rev. de Psychiat.*, No. 10, 1908, p. 417.

A CONSIDERABLE amount of research on the bacteriology of the blood and cerebro-spinal fluid of the insane has been carried out in France.

At Lille many workers have studied Wassermann's reaction, and it has been found that all syphilitics and general paralytics give a positive result. It has not been obtained in dements, but it is present in some epileptics and frequently in those suffering from dementia præcox. Idiots and imbeciles also have given the reaction, from which it is suggested that syphilis plays a more important role in the etiology of these conditions than has been hitherto suspected.

Bacteriological examination of different secretions and excretions has been made. The author has also endeavoured to make cultures from the blood and spinal fluid of general paralytics, and he has investigated the blood agglutination and opsonic indices of these cases, but without any noteworthy success. Strepto-bacilli and staphylococci were the only organisms obtained by Marie and Marchoux from the blood. They were unable to isolate the diphtheroid bacillus described originally by Ford Robertson and later by O'Brien and others.

Marie was unable to notice any relation between a lymphocytosis of the cerebro-spinal fluid and Wassermann's serum reaction. There may be a very marked reaction in cases where few lymphocytes are seen.

In syphilis no reaction is obtained with the cerebro-spinal fluid unless there is some specific central nervous lesion. In general paralysis, the more advanced the disease is the more evident is the reaction with the spinal fluid, while in early cases of the same disease better results are obtained by examination of the blood.

The toxicity of the urine in the mentally affected has also been the subject of investigation. R. DODS BROWN.

THE CLINICAL SIGNIFICANCE OF THE COMPLEMENT-COMBINING REACTION IN THE CEREBRO-SPINAL FLUID, PARTICULARLY IN GENERAL PARALYSIS. (Ueber die klinische Bedeutung der Complementbindungsreaktion im Liquor cerebro-spinalis, speziell bei der progressiven Paralyse.)

(178) VICTOR KAFKA, *Monatsschr. f. Neur. u. Psychiat.*, Dec. 1908, Bd. 24, S. 529.

IN this valuable contribution to the subject full details are given of 100 cases of insanity that were repeatedly examined. Of 60 cases of paralysis, 54 (= 90 per cent.) reacted positively, as did one case of simple luetic psychosis. The chief conclusions Kafka draws are the following:—The value of the Wassermann reaction is very high; a negative result has but little value; a positive one more than any other test, even cerebro-spinal lymphocytosis. The reaction is more marked in advanced cases if it bears no relation to remissions or seizures, and in no way corresponds with the extent or nature of the cell count. The presence of the reaction in the blood serum is of less value than its presence in the cerebro-spinal fluid, being more open to interpretation.

ERNEST JONES.

CLINICAL AND ANATOMICAL ANALYSIS OF 23 CASES OF INSANITY ARISING IN THE SIXTH AND SEVENTH DECADES, WITH ESPECIAL RELATION TO THE INCIDENCE OF ARTERIOSCLEROSIS AND SENILE ATROPHY AND TO THE DISTRIBUTION OF CORTICAL PIGMENTS.

(179) E. E. SOUTHARD and H. W. MITCHELL, *Amer. Journ. Insan.*, Oct. 1908, p. 293.

IN a series of 472 cases autopsied (1902-1907) at the Danvers Insane Hospital, Massachusetts, U.S.A., there were 23 cases in which the onset of mental disease occurred beyond reasonable doubt between the sixth and seventh decades of life. Cases of dementia paralytica, cerebral tumour, and extensive focal brain lesion were omitted from consideration. The cases can be simply classified as follows:—

Alcoholic	2	cases.
Paranoic	5	„
Delirious	4	„
Maniacal	3	„
Depressed	9	„

Hereditary factors of more or less importance are present in 47 per cent. of the series as a whole, or in 74 per cent. of those cases in which reliable histories were obtainable. Peripheral motor or sensory disorders were strikingly few, as also signs of focal brain lesion. Hallucinatory disturbances were found in 56 per cent., purely auditory in eight (8) cases, and auditory combined with visual in five (5) cases. Delusions occurred in 65 per cent., allopsychic in 12 cases. Very striking was the lack of amnesia in these cases. Three (3) cases showed amnesia for recent events, five (5) cases for both recent and remote events, three (3) cases (2 alcoholic) fabricated. Disorientation occurred in four (4) delirious cases, in two (2) alcoholic cases and in two (2) others. Perhaps seven (7) cases might be placed in the manic-depressive group of Kraepelin. Katatonic features were strikingly rare, since but two (2) cases of the paranoic group showed katatoniform signs, possibly mere reactions to delusions.

For the clinical details reference must be made to the original paper.

Theoretical interest lodges chiefly in the possible relation of these cases to arteriosclerosis and to brain atrophy. Only four (4) cases showed well-marked arteriosclerosis, and the arteriosclerosis in these cases (with duration of 10, 12, 22, 17, and 17 years respectively) appears to be a complication rather than an etiological feature. In this case three (3) were paranoic and 1 maniacal. Nor are the insanities arising in these decades due to the premature onset of senile atrophy. Eight (8) out of 11 female brains were atrophic—the average age at death was 69·8 years, the average duration 10·8 years. Five out of twelve male brains were atrophic—the average age at death was 65·6, the average duration 2·7 years. The atrophy is probably a function rather of age at death than of insanity in these cases.

A study of the distribution of pigment in the twenty-three brains (harking back to the somewhat neglected field of Bevan Lewis) demonstrates extreme and interesting variations in the cases examined. Perivascular cell pigmentation is almost uniform in different areas of the same case, bar focal destructive lesions, but varies in degree in different cases. Neuroglia cell pigmentation, when of general distribution, probably varies more or less directly with age. Nerve cell pigmentation (iron-hematoxylin) is not a function of age. It is premature to relate the amounts and distributions of nerve cell pigments with different mental diseases.

AUTHOR'S ABSTRACT.

A CONTRIBUTION TO THE STUDY OF PSYCHOGENIC CONDITIONS.

(180) **(Beitrag zum Verständnis der psychogenen Zustände.)** RISCH (of Eichberg), *Allg. Ztschr. f. Psych.*, Bd. 65, Ht. 2, 1908.

THE author warns the alienist against grouping all psychogenic disorders under hysteria, and against making a premature diagnosis of dementia præcox on the basis of a few catatonic symptoms.

The psychoses which develop in prisoners are good examples of a group of disorders which are caused by unpleasant experiences, and which are of short duration if the precipitating cause be removed. The stigmata of hysteria are absent in these cases as a rule. The psychosis is characterised by the fact not only that it is precipitated by a mental shock, but also that the intensity of the symptoms during the attack may be influenced by factors of psychological value.

In the child there is a similar difficulty of controlling the influence of upsetting mental factors; the various psychological and physiological reactions of the child in face of embarrassing or alarming circumstances are discussed in detail, as affording an analogy for the symptoms in these psychogenic disorders.

The medico-legal importance of this group of cases is referred to.

C. MACFIE CAMPBELL.

DEMENTIA PRÆCOX: A COMPOSITE HISTORY OF 200 CASES, WITH BLOOD FINDINGS IN 50.

(181) H. D. PURDUM and R. E. WELLS (of Michigan), *Journ. Am. Med. Ass.*, July 4, 1908.

THE paper is based on a study of 200 patients suffering from dementia præcox, the hope being that something, "however slight," might be added to our knowledge of this condition. Sixty-five per cent. showed mental or nervous defect in the family; the majority were normal in body and well-endowed mentally, even precocious up to the age of puberty. Gradually there appeared nervousness, shyness, loss of ambition, seclusive traits, vaso-motor disturbances, exaggerated sexual feelings, etc., all of which, as a rule, were unnoticed by the family for a year or two. Then the first real signs of the disease developed. First the psychic field showed definite emotional perversion; next the special senses were involved, and in attempting to explain their morbid feelings delusions were developed; finally, the attitude, manner, and will became affected.

At this point the differentiation of the types of dementia præcox became more evident. Of the catatonics 22 per cent. were able to return to their homes, 10 per cent. seemed to be well, and 12 per cent. slightly demented. In the hebephrenic form there were few recoveries; the mental decline was uniformly progressive. The paranoid type showed no remissions and no recoveries.

Differential blood examinations were made in twenty-five catatonic patients and twenty-five of the hebephrenic type. The urine in forty-four out of fifty cases showed an excess of indican. From the summary made in the tabulation of these fifty cases the authors conclude that "the prevailing mild leucocytosis and the increase in the percentage of the eosinophile and large mononuclear cells with a low neutrophile count is of considerable interest. The facts enumerated in reference to the blood and urine point strongly toward a physical basis for the disease, possibly an auto-intoxication of intestinal or glandular origin." C. H. HOLMES.

ON THE PATHOLOGY OF IDEAS OF GREATNESS. (Zur (182) Pathologie der Grössenideen.) M. KAUFFMANN (of Halle), *Allg. Ztschr. f. Psych.*, Bd. 65, Ht. 2.

ACCORDING to the author the megalomanic trend in general paralysis is not to be explained merely on the basis of the dementia; it is largely due to abnormal stimuli arising in the viscera. In discussing the rôle of these organic sensations Kauffmann refers to the pathological euphoria of the phthisical, and contrasts the feeling of well-being in some lung disorders with the attacks of anxiety in heart disorders. In some cases of general paralysis a morbid feeling of happiness and strength is the direct cause of the ideas of greatness.

C. MACFIE CAMPBELL.

TREATMENT.

THE TREATMENT OF POTTS' DISEASE OF THE LUMBAR (183) VERTEBRÆ. A. MACKENZIE FORBES, *Montreal Med. Journ.*, Dec. 1908.

THE one important fact in this paper is that hyper-extension of the back is a convenient means of giving rest—the fundamental principle of the mechanical treatment of Potts' disease—when the tuberculous lesion is in the lumbar vertebræ. The normal position of the lumbar spine is one of lordosis, and Lovett has demonstrated that hyper-extension limits rotation in the lumbar region, and that rotation and lateralisation go hand-in-hand.

The methods by which this attitude of hyper-extension may be attained are discussed and suitable cases indicated.

W. KELMAN MACDONALD.

THE X-RAY TREATMENT OF EXOPHTHALMIC GOITRE. G. E. (184) PFAHLER, *N.Y. Med. Journ.*, Oct. 24, 1908.

THE literature of the subject has been carefully reviewed, and of fifty-one cases of exophthalmic goitre treated by Röntgen rays, good results were obtained in over 75 per cent. of cases, with no risk to the patient and no great inconvenience.

In this paper, which is a plea for the further trial of Röntgen rays in exophthalmic goitre, the author comes to the following conclusions:—

1. Decided improvement may be expected in about 75 per cent. of cases.
2. This improvement consists of an increase in weight and strength, and gradual disappearance of the Basedow symptoms.
3. Some improvement should be noticed within a month, and after six to a dozen treatments.
4. When this treatment is properly given there appears to be no danger, and no objections can be seen in recommending this trial of a month in all cases.

W. KELMAN MACDONALD.

DISSEMINATED SCLEROSIS IMPROVED BY RADIOTHERAPY. (185) (Rapport sur un travail de M. le Prof. Marinesco, intitulé, "Deux cas de sclérose en plaques améliores par la radiothérapie.") RAYMOND, *Bull. de l'Acad. de Med.*, No. 44, Jan. 1909, p. 15.

GOOD results are reported in treating two cases of disseminated sclerosis by X rays. Prof. Raymond points out they are also useful in syringomyelia, in spinal spasmodic paraplegias due to pachymeningitis and in chronic transverse myelitis. In some cases of disseminated sclerosis the young cellules are specially affected. He suggests that it is in this type of case that X rays will be found to be useful.

R. W. LANG TODD.

THREE CASES OF FACIAL SPASM TREATED BY INJECTIONS (186) OF ALCOHOL. HUGH J. PATRICK, *Journ. of Nerv. and Ment. Dis.*, Jan. 1, 1909, p. 1.

THE distinctions between facial tic and facial spasm are indicated, after which the records of three cases are detailed, in which treatment by injections of alcohol, a method for a knowledge of which the author acknowledges his indebtedness to the French school, are recorded. The method, which is only called for in severe cases, is simple, and has so far been attended by no disadvantageous results, apart from a temporary facial paralysis. The spasm is abolished for a considerable period after the injections, even if the result is not permanent.

Case I.—A widow, aged 38, suffering from a practically tonic spasm of two or three years' duration. On September 19, 1907, 15 to 20 minims of a 75 per cent. alcohol, containing a little cocaine, were injected with an ordinary long hypodermic needle immediately in front of the mastoid process, in order to reach the nerve at its exit from the stylo-mastoid foramen. The spasm at once ceased, and at the same time facial paralysis became obvious, and in a few minutes was complete. Five and a half months later the facial paralysis had practically disappeared, and on May 15, 1908, there was no return of the spasm.

Case II.—A male, aged 64, seen on September 24, 1907. Duration of spasm four years. The injection of 40 per cent. alcohol had no effect on the spasm, nor was any facial paralysis produced. The point of the needle had probably missed the nerve.

Case III.—A male, aged 32, seen on October 28, 1907. The spasm had lasted for three years. An injection of 40 per cent alcohol on December 3rd did not influence the spasm, nor was facial paralysis produced. The nerve had probably been missed. On December 16th, 20 minims of a 50 per cent. alcohol were injected, with a result that almost immediate facial paralysis and cessation of the spasm were induced. When seen five months later there was no longer any facial palsy, nor had there been any return of the spasm. EDWIN BRAMWELL.

Reviews

THE PUPIL. ANATOMY, PHYSIOLOGY AND PATHOLOGY, METHODS OF EXAMINATION. (Pupillenlehre. Anatomie, Physiologie and Pathologie, Methodik der Untersuchung.) Dr LUDWIG BACH (Professor of Ophthalmology in Marburg). Berlin : S. Karger, price 12 M.

WE venture to think that this book, devoted to a study of so limited a subject, will, nevertheless, be found to contain much valuable reading alike for the ophthalmic surgeon and the neurologist. The book contains no less than 344 pages, so that the author has given himself room for a full exposition of the subject. The first chapter gives a clear anatomical description of the reflex paths and nerve centres governing the pupillary movements. The next deals with the physiology of the movements of the pupil, and gives a detailed account of the various pupillary reactions. The third chapter deals with the general pathology of the pupil, and in it the various disturbances of the pupillary reactions are discussed. These include such important conditions as the hemianopic pupil reaction (the existence of which appears to be doubtful) and reflex immobility of the pupil (Argyll Robertson symptom). No less than 30 pages are occupied with a description of this phenomenon, and a discussion of the various theories brought forward to explain it. The author, it may be mentioned, appears dissatisfied with all the theories. With regard to Marina's theory, that the lesion is situated in the ciliary ganglia, the author points out that in most of Marina's cases the ganglia were taken from patients who had died in an extremely advanced stage of bodily weakness, in some cases a long period of coma having preceded death. Next follows a chapter on the special pathology of the pupil, in which the pupillary changes are discussed in connection with the various diseases in which they occur. The last chapter discusses the methods of examination of the pupils. The closing part of this chapter, which gives the author's own methods, is specially noteworthy. The methods described are simple and require no special instruments and no great expenditure of time. The book is written in an interesting fashion, and evidently embodies the results of a wide clinical experience. J. V. PATERSON.

"**MIND AND ITS DISORDERS.**" W. H. B. STODDART. London: H. K. Lewis, 1908, 12s. 6d.

THIS work is divided into three parts: normal psychology, abnormal psychology, and mental diseases. In the introductory chapter there is an ingenious diagrammatic representation of the connections between the periphery and the projection and association areas.

The section devoted to normal psychology contains chapters dealing with sensation, perception, ideation, association of ideas, affection (here the author submits that "Monakow's bundle subserves the function of the motor element of emotion"), action, attention, fatigue and sleep, the sentiments, language, and the ego. The disorder of these mental functions which occurs in insanity is then fully described.

The author follows Professor Kraepelin in his classification of the various forms of mental diseases, though he adopts his own sub-divisions under the main types. The impossibility, in the present state of our knowledge, of pigeon-holing the various forms of insanity is evidenced by a few pages being devoted to "Mixed Psychoses."

The disciples of Kraepelin have a tendency to attach undue importance to the stigmata, attitudes, mannerisms, and curious movements to be observed in dementia præcox, whereas they may be present in many other forms of mental disease occurring at any age. This tendency is seen in the present book: the symptom of muscular rigidity involving the facial muscles (Snautz-Krampf), referred to on page 135 as occurring in katatonic stupor, may be observed in cases where no other signs of dementia præcox are present, and the best example of it I have ever seen occurred in an epileptic who was one of the most energetic workers in the asylum and exhibited the symptom while at work. The flattening of the thenar and hypothenar eminences (page 230) stated to occur "in many instances" of dementia præcox may be noted in other forms of insanity where motor inactivity is present.

Other instances are "the characteristic handshake" (page 241); and again, on page 420, Dr Stoddart states, in discussing the differential diagnosis between certain cases of acute confusional insanity and dementia præcox, ". . . and especially if the patient shows a tendency to keep one hand constantly over the external genitalia I regard the case as being primarily one of dementia præcox." He very properly adds, "These, of course, are mere working rules, they are not infallible."

The bed-treatment is recommended in melancholia, and the use of sulphonal as a hypnotic in this affection is rightly condemned.

The author regards chloroform as "our sheet-anchor" (page 208) in bad cases of acute delirious mania. Under the anæsthetic an enema is administered, patient's stomach is washed out, he is tube-fed, he is "made comfortable in bed and the anæsthetic continued carefully for another hour. He is not aroused from the anæsthetic. The sleep continues for many hours; he wakes up refreshed and makes a fairly rapid recovery." The author's experience of this treatment is limited to two cases, in each of which "the patient's life was undoubtedly saved by the adoption of this method."

The differential diagnosis of neurasthenia is fully described, and the concluding chapters deal with case-taking, feigned insanity, staining methods, the cerebro-spinal fluid, and the legal aspects of insanity.

There are numerous illustrations throughout the book, some of which are very good, and the diagram illustrating the various phases of recurrent insanity should be useful to teachers. This is a reliable text-book, it is up-to-date, comprehensive, pleasant to read, contains much original work, is printed in good type, and its value is much enhanced by the sections on normal and morbid psychology. H. DE M. ALEXANDER.

HANDBOOK FOR ATTENDANTS ON THE INSANE. BAILLIERE, TINDALL & COX, London, 1908, 5th edition, 2s. 6d.

THIS is the fifth edition of the handbook issued by the Medico-Psychological Association. The work of revision has been so thoroughly carried out that it is practically a new book. The title of the book might have been changed with advantage.

The opening sections are devoted to elementary points in anatomy, physiology, accidents, emergencies, first aid, general symptomatology of disease, and a brief description of the commoner diseases of each system. The nursing of the sick, and the general management of a sick ward are well described, though the reader should have been instructed how to fill a water-bed correctly.

The chapters on the mind in health and disease, and the nursing of the various forms of mental disease, occupy the major part of the book. This section might be read with profit by every student of medicine, and the general hospital nurse will find in it a complete guide to the management of a mental case.

The diagram on p. 193, showing the course of the motor and sensory tracts, is quite beyond the comprehension of those for whom the book was written; a more simple diagram would have sufficed. The index should be extended in further editions.

The Medico-Psychological Association is to be congratulated on the publication of this manual; it is printed in clear type, is easily read, and should tend to still further raise the standard of the nursing staff of our mental hospitals.

H. DE M. ALEXANDER.

FREEWILL IN MODERN THEOLOGY, PSYCHIATRY, AND LAW, WITH A REPLY TO AN ARTICLE BY OBERSTAATSANWALT PETERSON. (Die Willensfreiheit in moderner theologischer, psychiatrischer, und juristischer Beleuchtung. Nebst einer Abwehr gegen Oberstaatsanwalt P.) Dr JOH. BRESLER. Halle: Marhold, 1908, M. —80.

THE preface to this pamphlet consists of a long criticism of an article dealing chiefly with experts on psychiatry, and which appeared in a German law newspaper, by Oberstaatsanwalt Peterson, of Hamm.

According to Peterson a judge does not require the opinion of a medical expert as to whether a diseased condition of mind in a prisoner is the cause of preventing the free action of will power, for, he states, the conception we have of freewill is an extremely wavering and uncertain, and above all, not a medical one. Many thinkers, especially in modern times, shut out the possibility of freewill in mankind altogether, others grant the normal man an almost imperceptible amount of freewill. In using paragraph 51 Str. G. B. ("An offence is not punishable if the prisoner at the time of the offence was in a state of unconsciousness, or in a diseased state of mind by which his power of freewill was cut off"), the Oberstaatsanwalt says that the judge must use his own opinion as to the meaning of the term "freewill," and not that of the expert.

With regard to the above paragraph, the author refers to Mendel, late Professor of Psychiatry at Berlin University, who for many years gave a special lecture, "The State of Soundness of Mind," for medical and law students. How amusing it would have been if a judge, who had been one of his students, came to Mendel and said, "The state of soundness of mind (or state of being responsible for one's actions) is no medical question: you do not need to teach me about that"? It is, however, much less a medical question than freewill is.

According to Peterson, the part of the medical expert is to judge as to the state of unsoundness of mind, and of the judge, as to whether this state prevented the free action of the will. This opinion the author ridicules, and quotes Mendel and Jolly, who both agree that medical men should be consulted on the latter point. If not, it would come to this, that if the doctor discovered a disease of the eyes, the judge would then say how far the patient could see; or if the doctor diagnosed paralysis of the limbs, the judge would decide how far the patient could run.

In the years 1904 and 1905 there were in Prussia 915 persons tried according to paragraph 51 Str. G. B. Of this number insanity was proved in 585 cases, not proved in 301 cases, and the remaining 29 cases remained undecided. The total number of convictions in Prussia for the year 1904 was 322,361.

Peterson says further that if it went according to the many who consider the criminal simply as an object for psychological or medical consideration, then "infallible medical science would force its way into jurisprudence in as self-conscious and undermining a manner as the Church did in the declining period of the Middle Ages." He also states that as a rule the criminal absolved by the law as not being a responsible person is set at large, without any restraint. The author proves this statement incorrect, by quoting at length letters from the Home Secretary showing that such cases are handed over to the care of the local police, or sent to institutions.

Another point referred to by Peterson is that "as a rule the evidence of experts reads to show that their several opinions differ in essential points." The author says that this "rule" exists only in Peterson's imagination. He not only exaggerates, but should save himself the trouble of bringing before readers interested in the legal profession the old story of disagreement in the points of view of experts; "or is perhaps unanimity to be found in the law courts?" he asks.

Dr Bresler then proceeds to discuss the term freewill in different aspects, and in conclusion shows that jurist, psychiatrist, and theologician, in spite of different starting-points, arrive at the same goal, viz., the theory of determinism.

HAMILTON C. MARR.

THE CARE OF DANGEROUS LUNATICS, WITH SPECIAL REFERENCE TO THE CONDITIONS IN THE GRAND-DUCHY OF HESSE. (Die Fürsorge für gefährliche Geisteskranke, unter spezieller Berücksichtigung der Verhältnisse im Grossherzogtum Hessen.) *Vereinigung für gerichtliche Psychologie und Psychiatrie im Grossherzogtum Hesse*, Vol. v.

THIS publication contains four articles by those interested in the lunatic asylums of Hesse. The first is by Direktor Lenhard, Bruchsal, and consists of a history of the erection of special wards for the treatment of criminal lunatics in that town. Quotations are given from German authorities, who are unanimous on the point that criminals are a class requiring separate treatment, and should not be sent to ordinary asylums. The author strongly advises that a building be annexed to the prison, as has been done with great success in Bruchsal, for the care of insane prisoners, and he enumerates the advantages of such a procedure.

In the second article Professor Dannemann, Giessen, gives different methods of treating the insane criminal. To show how some of these methods are carried out he describes the treatment in criminal asylums of America, England, Ireland, France, Italy, and Germany. He is of opinion that dangerons lunatics should be isolated.

Dr Osswald, superintendent of the asylum at Goddelau, then discusses the question as to how far criminal patients disturb the routine of asylums. At Gottelau, on the female side, there are very few criminals; on the male side, out of 708 patients at 15th November 1907, there were 62 who had at one time of their lives been convicted, 111 criminal lunatics, *i.e.* criminals who were insane before or at the time of their offence, and 33 insane criminals, or those who became insane after conviction. Dr Osswald states that patients of a better class complain frequently of having to associate with criminals, while weaker patients are influenced by the prisoners, who boast of their misdeeds, recognise no authority, and quite openly scold and talk abusively. In spite of the fact that they are better off in the asylum than in the prison, they are never satisfied. They complain of the food, which, when one refuses, all refuse. They are little inclined to work, but use their time devising mischief together, stirring up insubordination, or contriving a means of escape. They are very ingenious in making weapons or keys, and on this account have to be constantly watched. The young attendant is often deceived in them, not recognising their insanity, and gives them extra freedom which they use to a disastrous end. Other attendants who use more authority over them are hated by the prisoners. They often get these attendants into trouble by accusing them of theft, maltreatment of patients, etc., and their story is so cleverly made up that it is difficult to believe it is untrue from beginning to end. The doctor is the subject of their hatred, and stands frequently in danger on their account. In short, criminal lunatics are a source of danger and annoyance to patients and staff in an ordinary asylum, and Dr Osswald strongly advises that special buildings be erected for them.

Dr Kullmann of Butzbach gives statistics to show the numbers of insane found among the prisoners of Hesse during the seven years from 1900 to 1907. In the two large prisons of Butzbach and Marienschloss there were 88 cases of insanity, or 2·5 per cent.

and 2·8 per cent. of the daily averages, while in the State penitentiary there were 27 cases, or 1·7 per cent. Dr Kullmann attributes the larger number of cases of insanity in the prisons to the effect of isolation. The different forms of insanity found among the prisoners are given, cases are cited, and treatment explained. HAMILTON C. MARR.

BOOKS AND PAMPHLETS RECEIVED.

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Review
of
Neurology and Psychiatry

Original Articles

FOUR CASES OF TUMOUR IN THE REGION OF THE HYPOPHYSIS CEREBRI.

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(With Plate 4.)

CASE 1.—E. W., a single woman aged 26, was seen in Dr Murrell's ward at the Westminster Hospital on January 27, 1902, having been brought to hospital a week previously for persistent somnolence of seven weeks' duration.

The patient was one of ten children, of whom four died in infancy, the other members of the family being healthy. There was no history of nervous or mental disease in any relation.

Until the age of sixteen the patient was a healthy girl, of a lively and excitable disposition. The catamenia appeared at 14½, and were regular until the age of sixteen. They then suddenly ceased, and had not since reappeared. This amenorrhœa was at the time attributed by her mother to the shock caused by a relative's death.

Since the age of sixteen she had been subject to peculiar "attacks" at irregular intervals. These attacks varied in duration from two weeks or less at first to three or four weeks latterly. The interval between the last attack and the present one was eighteen months. In the intervals between the attacks the patient appeared to be perfectly well, except for the amenorrhœa above noted. There has never been headache.

At the onset of an "attack" the patient was said to become strange in her manner; she appeared generally feeble and took to her bed, where she remained in a sleepy, stuporose condition, with rigidity of all the limbs. The earlier attacks were ushered in by vomiting of bilious material. During these attacks she could be roused to be fed, and was able to recognise her mother. She was therefore not comatose, but apparently only somnolent. All the previous attacks had cleared up suddenly, the patient waking up feeling perfectly well. Two years ago her mother noticed that she squinted for about a week, complaining of double vision. This passed off and had not since recurred.

Her present attack, the most prolonged of any, began seven weeks ago, being preceded by a curious feeling in the head. After remaining somnolent and rigid for three weeks, she woke up one day, got up and sent off a parcel by post, then returned to bed, and has been stuporose ever since. Previous to her admission to hospital she had been regarded as a case of hysteria.

On admission on Jan. 22 the temperature was 100° F., after which time it varied from 100° to 104°. The pulse varied from 134 to 152, and the respirations from 48 to 78 per minute. On Jan. 27, when I saw her first, the temperature was 100°·2 F., pulse 136, and respirations 48. There was some dulness on percussion at the left base posteriorly, with tubular breathing and crepitations, evidently a pneumonic consolidation. The urine was alkaline and had a trace of albumin; there was no glycosuria.

When first admitted she was fed by the mouth, but she swallowed so badly that nasal feeding had to be substituted. Her jaws were tightly clenched, and could only be opened by means of a gag. From the time of admission she remained in a state of stupor, taking no notice of her surroundings and passing urine and fæces in bed. There were no bed-sores.

Condition on examination (*January* 27). — The patient is a markedly emaciated young woman, who lies on her back or side indifferently, with the hips and knees flexed rigidly, the ankles and toes being flaccid; similarly the shoulders and elbows are rigid and flexed, with flaccid wrists and fingers.

There are occasional rhythmic tremors in the right upper limb, consisting of rotatory movements at the shoulder. The patient is stuporose, but can be made to move the limbs by strong stimuli, such as pinching the skin. The optic discs are normal. The pupils are equal in size, not quite circular in outline, and do not react to light. The patient lies with the eyes staring directly forwards, and takes no notice of a bright light brought close up to the eyes from any portion of the visual fields. There is no facial asymmetry nor any paralysis of the palate or tongue. There is apparently no analgesia to pin-pricks on the face, trunk, or limbs. The supinator jerks and knee jerks are normal and equal on both sides; there is no ankle clonus. The plantar reflexes are extensor in type; the abdominal reflexes are present and equal. The sphincters of the bladder and rectum are uncontrolled.

February 3.—The patient is moribund, both lungs now showing signs of consolidation at the bases. Rotatory tremor of the right arm is induced whenever the jaw is forced open for purposes of feeding or of cleaning the mouth. The rigidity has become much less marked during the past few days. To-day the knee jerks cannot be elicited. The patient died this afternoon.

Autopsy.—At the base of the brain the inter-peduncular space was occupied by a large cystic tumour, apparently arising from the infundibulum, extending from the optic chiasma in front to the crura cerebri behind (see Fig. 1). From the anterior end of its under surface a stalk connected the growth with the pituitary body. The sella turcica was not enlarged. After hardening in formalin sections showed (see Fig. 2) that the growth had pressed up and practically obliterated the third ventricle, flattening it from below upwards. The lateral ventricles were not dilated. None of the cranial nerves was implicated in the tumour. Microscopic examination showed the growth to be a sarcoma. The cyst was distended by a greenish colloid material. The spinal cord was free from degeneration, on examination by the Marchi method.

There can be little doubt that in this case the tumour had existed for at least ten years, the period at which the amenorrhœa and the attacks of drowsiness first appeared. It is interesting to note that at no time was there headache, vomiting, or any other symptoms to suggest an intra-cranial growth, with the exception of an attack of transient squint and diplopia two years before death. The remissions in the drowsiness were most striking. Even during her terminal seven weeks' somnolence she suddenly woke up, four weeks before death, and for a few hours was apparently normal. Possibly this may be attributed to variations in the tension of the fluid within the cyst, or to variations in its direction of growth. Similar remissions have been observed in other cases of growths in this region, notably in a case of Sträussler (32), an infundibular cyst with well-marked clinical signs of pituitary growth, in which many of the phenomena improved to a striking extent for a month, but ultimately relapsed; also in a case recorded by Berger (3), where a boy with a carcinomatous growth of the pituitary gland had a temporary recession of many symptoms.

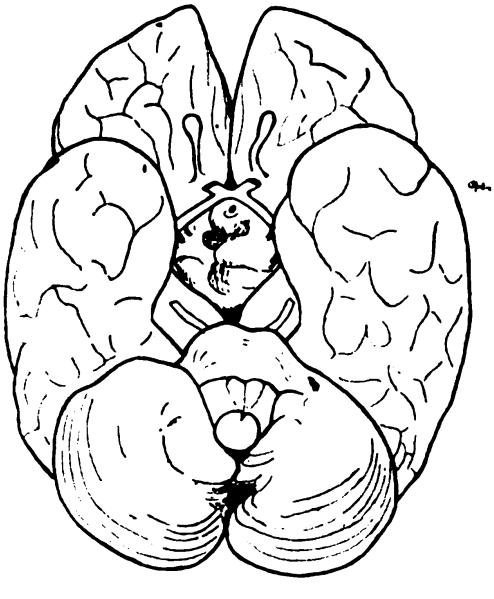

Fig 1. Infundibular growth (from a photograph)

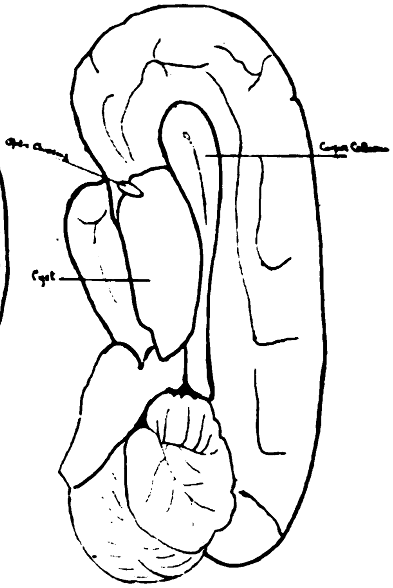

Fig 2. (from a photograph) vertical, mesial section of brain showing dilatation of third ventricle

This patient had no signs of acromegaly. Her mental condition was such that no observations could be made on the state of the visual fields.

CASE 2.—R. B., a butcher, aged 35, was apparently healthy until a month before he came under observation. He then had three attacks of unconsciousness in one day. Preceding each attack he had a visual aura like a "gas-globe," referred to the right eye. He was unconscious, and had general convulsions. The attacks were followed by severe headache, but not by vomiting. A few days after these attacks he complained of defective vision in the right eye, and when Dr Mailer, of Wood Green, his own medical adviser, examined the patient, the right eye was found to be totally blind.

Condition on examination, March 7, 1908.—The patient is a healthy-looking, intelligent man, of rosy complexion. He can smell cloves acutely in both nostrils. There is total blindness of the right eye, and temporal hemianopia of the left. The optic discs are chalky white; the retinal vessels are normal in size. The left pupil contracts to light, the right pupil contracts consensually with the left, but not directly when illuminated by itself. Both pupils contract on convergence. The external ocular movements are normal; the muscles of mastication, face, palate, and tongue move normally. The patient hears a watch ticking at six inches from either ear. There is no sensory or motor abnormality of the trunk or limbs. There is no enlargement of the hands or feet. The knee jerks are normal, the ankle jerks difficult to elicit. The plantar reflexes are flexor in type. The heart is normal; the blood pressure measures 105 mm. of Hg. The urine is free from albumin or sugar. The sexual functions are normal, patient's wife being seven months pregnant.

March 24.—An X-ray photograph (by Dr Robert Knox) shows the pituitary fossa to be considerably enlarged (Fig. 3).

April 30.—The headaches having increased in severity, the patient was admitted to St Thomas' Hospital, under Mr Ballance, for operation. On admission it was observed that the sense of smell had disappeared, the patient being now unable to smell peppermint or turpentine. Otherwise the physical signs were as before.

May 9.—A preliminary tracheotomy having been done a few days ago, Mr Ballance to-day attempted to reach the tumour through the roof of the pharynx. The palate, both soft and hard, was divided in the middle line, and the whole hard palate was chiselled away. The turbinate bones and the vomer having next been removed, the sphenoidal sinus was entered through the roof of the pharynx. Projecting into the sphenoidal sinus from above a pulsating mass was felt. This was incised, and found to consist of soft tumour-tissue. Violent hæmorrhage supervened, and the wound was tamponnaded. During the course of the operation the right eye became proptosed and the right pupil widely dilated; the right eye also assumed the posture of external strabismus—a cavernous-sinus syndrome. The patient never recovered consciousness; the pulse ran up to 150, and he died five hours later.

Autopsy on May 11, by Dr C. R. Box.—On opening the skull and raising the brain from its bed, a large lobulated tumour was seen at the base, embedded in the floor of the skull. The visible portion of the tumour measured over two inches from before backwards, and nearly two inches across. It filled the pituitary fossa, and also infiltrated the petrous part of the right temporal bone. It consisted of several large lobules about the size of cherries, with some smaller ones (Fig. 5). The tumour had a broad stalk passing upwards through the diaphragma sellæ. The brain was removed, leaving the tumour *in situ.* On the under surface of the brain there was an extensive depression (see Figs. 4 and 6), with sinuous margins corresponding to the outlines of the lobulated tumour. This depression involved the right half of the brain more than the left. It extended from close behind the olfactory bulbs in front to the upper border of the pons behind. The most posterior lobule of the growth had left its impress on the right crus cerebri, immediately in front of the third and fourth nerves. A lateral lobule on the right side had indented the uncus and front part of the hippocampal gyrus. An anterior lobule had compressed the under surface of the right frontal lobe. The left frontal lobe had also been compressed, the mark of compression being internal to the olfactory tract of this side. The left hippocampal and uncinate gyri were practi-

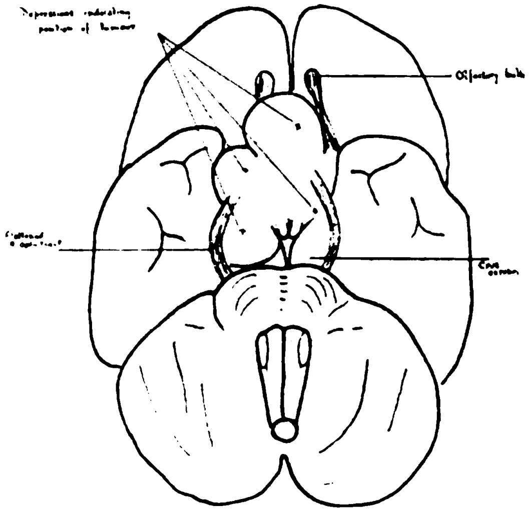

Fig. 4

PLATE 4.

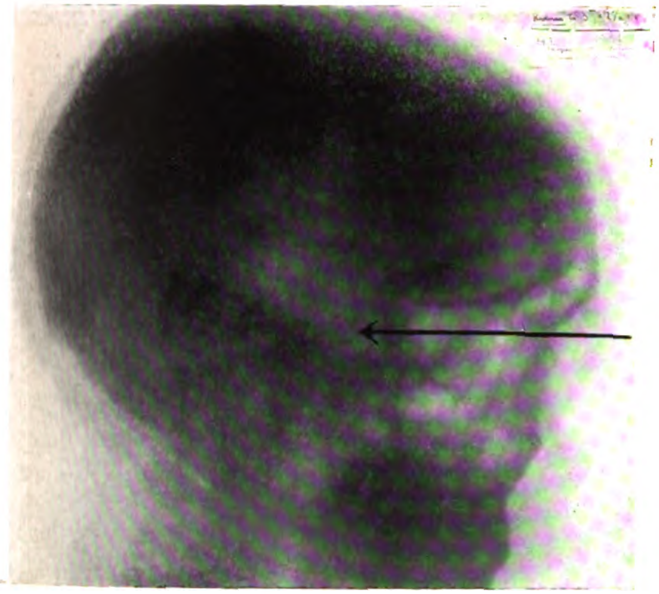

FIG. 3.

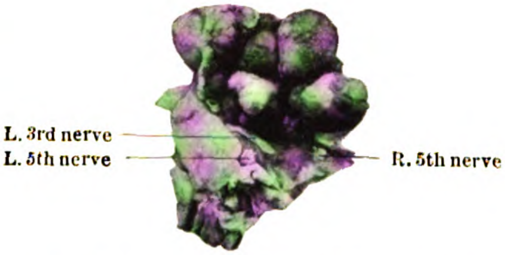

FIG. 5.—SHOWING LOBULATED TUMOUR ATTACHED TO BASE OF SKULL.

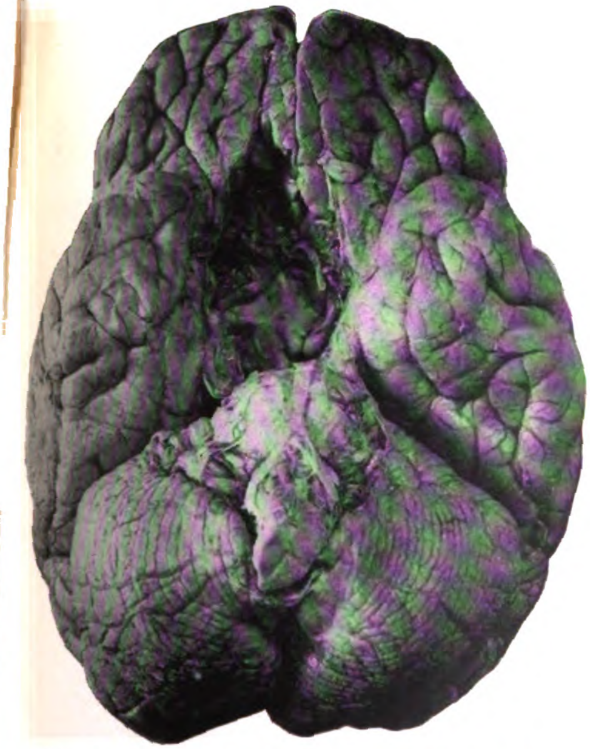

FIG. 6.—SHOWING DEPRESSION IN BRAIN AFTER SEPARATION OF TUMOUR.

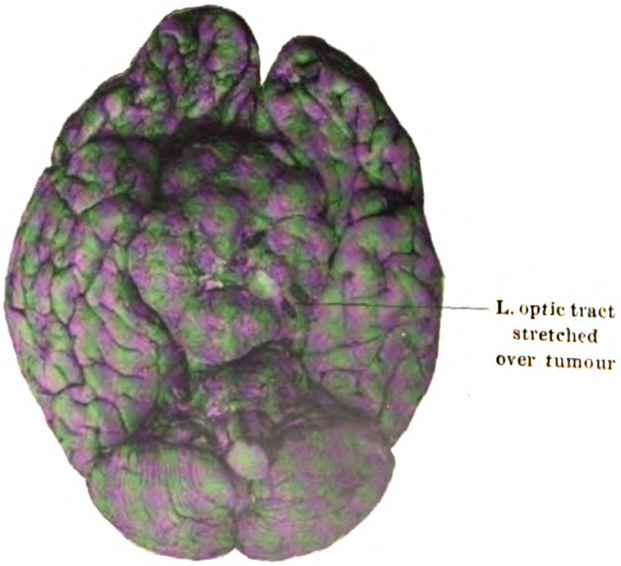

FIG. 7.—TO SHOW TUMOUR *IN SITU*

To illustrate Dr Purves Stewart's Article.

cally uncompressed. The corpora albicantia were flattened out by the tumour. The under aspect of the right frontal lobe and adjacent part of the left, corresponding to the tumour, showed a moderate degree of superficial softening. The base of the skull was chiselled out around the tumour, and the whole growth was thus removed. In addition to the lobulated portion already described, the growth filled the sella turcica, part of which had become absorbed. A diaphragm of dura mater intervened between the two portions of the growth. Lying alongside the sella in the right side was a fusiform portion of growth which occupied the position of the cavernous sinus, extending forwards from the apex of the right petrous bone. This mass was invested by dura mater; its size was about that of the terminal joint of the little finger. The relations of the cranial nerves to the tumour were as follows:—

The right olfactory tract was stretched over the fore part of the lobulated mass, but the left tract was only slightly displaced outwards.

The right and left optic nerves were stretched astride the tumour nearer its anterior than its posterior end. The right one was embedded in a sulcus between two of the lobules, and had been severely compressed. On tracing the right optic tract backwards it was found to be compressed almost beyond recognition as far back as the crus cerebri. The tract lay between the upper surface of the tumour and the under surface of the brain. The left optic nerve was less severely stretched than the right, and owing to the greater extent of the growth to the right side, the left optic tract had escaped compression.

The left third nerve appeared to have escaped, but the right third was stretched over the posterior end of the swelling in the region of the cavernous sinus.

The left fourth nerve was normal; the right fourth nerve was not recognisable.

The fifth nerves, as they lay on the upper borders of the petrous bones, appeared intact, but the right nerve was immediately posterior and subjacent to the swelling already described in the position of the cavernous sinus.

The sixth nerves were intact.

The carotid artery, which traversed the growth, lay close to the edge of the operation-incision which had been made through the sphenoidal sinus.

One of the most remarkable facts in this case is the latency and comparative slightness of the clinical phenomena, compared with the large size of the growth and the extent to which it had infiltrated the base of the skull and compressed the superjacent brain. Although the optic atrophy must have been of long standing, no visual defect was noticed until some days after the series of epileptiform fits which ushered in the clinical symptoms. Subsequent to this, practically the only signs were the blindness of the right eye with temporal hemianopia of the left—indicative of a chiasmal lesion—and the deepening of the sella turcica, as shown by the radiogram. The growth infiltrated the right cavernous sinus, yet no evidence of a cavernous-sinus syndrome occurred until during the progress of the attempted removal of the tumour by operation. Moreover, although the brain was deeply indented and compressed, yet there were no evidences during life of any alteration in the sensory, motor, or reflex functions. The tumour, therefore, was much larger than the clinical phenomena had led us to expect,—so large as to prevent any possibility of its successful removal. This, however, could not have been foreseen.

Another point of interest is the manner in which an attempt was made to reach the tumour. Instead of attacking the growth from above, by an intracranial route, we decided to approach it from below. The operation performed by Mr Ballance differs, however, from that done by V. Eiselberg (11), Schloffer (27), Hochenegg (19), and others. These surgeons turn aside the whole nose, clear out the nasal cavity, and approach the sella turcica far back between the orbits, through the roof of the sphenoidal sinus. This method, however, affords a very narrow route of access, and, moreover, must necessarily be associated with some degree of deformity of the face. The method adopted by Mr Ballance in our case does not entail any facial deformity, and, moreover, affords a wider channel of access to the growth from below. In fact, after removal of the hard palate, the vomer, and the turbinate bones, the finger was readily introduced direct into the sphenoidal air-sinus, and the tumour was felt pulsating there. Unfortunately, as we have seen, the growth was too extensive to be removed.

Case 3.—Mrs L. M., a widow, 61 years of age, was admitted to Westminster Hospital, under my charge, on Aug. 17, 1908. Her father died from some form of paralysis at the age of seventy-eight; there was no other history of nervous disease in the family. A brother and a sister died of pulmonary tuberculosis, and one of the patient's daughters suffers from spinal caries. The patient was married thirty-five years ago, and has had four children.

Shortly before her marriage the patient had "rheumatic gout" in the eyes, with severe pain, and was kept in a dark room for three months. She recovered from this illness, but, after the birth of her first child, a year later, she had a relapse. Subsequently her eyesight gradually failed, and after a number of years—she cannot recollect how many—the right eye was found to be totally blind. Later she noticed that the vision of the left eye was impaired also, but her observations on this point are very vague.

Two years ago she became abnormally drowsy; she slept as usual at nights, but, in addition, she was noticed to fall asleep in the daytime during meals. This drowsiness has gradually increased. For about two years she has also complained of sensations of giddiness. She has developed a voracious appetite. Her gait has become uncertain, and she has occasionally run into people when walking in the street, probably, as will be seen presently, owing to hemianopia. Causeless vomiting supervened, and two years ago she was admitted to another London hospital, where a diagnosis of cerebral tumour was made, but no localisation of the growth was accomplished. Since then, owing to her difficulty in walking, she has been confined to bed. The drowsiness has continued, the patient sleeping the whole night and nearly all day, and requiring to be wakened for meals. Thirteen months ago she complained of vertical headaches, nocturnal; these ceased about five months ago. Within the past few months she has had occasional choking attacks, especially when swallowing fluids. Her articulation has been occasionally indistinct, and she has had dribbling of saliva. She still complains of giddiness, chiefly on passive movement of the head.

Condition on examination, August 18, 1908.—The patient is a well-nourished woman of good complexion, who lies in bed with the eyes closed; she is drowsy, but can be roused by moderate stimuli, and replies intelligently to questions. She keeps the head and eyes habitually turned towards the right side, and seldom turns them in any other direction. Speech and articulation are normal. She can smell phenol and iodoform, better on the left side than on the right. The right eye is totally blind; in the left eye there is temporal hemianopia. The nasal half of the left field is all that survives. In this she can distinguish bright lights, but cannot count fingers or see faces. There is double optic atrophy. The pupils are not circular, the right being larger than the left. The right pupil does not react to light, the left reacts very sluggishly. The patient cannot converge. She can look freely upwards or downwards, but has apparently great difficulty in conjugate movement of the eyes to the left. The upper facial muscles are normal and symmetrical on the two sides, the left lower face is weak, the naso-labial fold being shallower than on the right side, both at rest and on voluntary movement. There is no deafness. The movements of the jaw, soft palate, and tongue are normal. There is no cutaneous anæsthesia of the face, trunk, or limbs. All the movements of the limbs can be performed, though in a languid manner; there is no tremor of any limb. The patient cannot stand. When supported on both sides she walks feebly in a shuffling fashion, without localised weakness of any particular limb. There is no muscular spasticity. The knee jerks and ankle jerks are normal and equal; the plantar reflexes are indefinite in type, the abdominal reflexes absent. There is incontinence of urine and fæces, apparently from mental dulness. The thoracic and abdominal organs are apparently normal; the urine is free from albumin or sugar.

August 25.—The drowsiness continues as before. The patient requires to be fed. She falls asleep between mouthfuls of food. All other physical signs remain the same. The prolonged course of the complaint, the headache, vomiting and progressive mental dulness, with the double optic atrophy, pointed to an intracranial tumour. The absence of sensory or motor symptoms and the occurrence of blindness of the right eye, with temporal hemianopia of the left, indicated a basal growth in the neighbourhood of the chiasma, extending more towards the right side. It was therefore decided to attempt removal of the tumour, and accordingly, on Aug. 28, my colleague, Mr William Turner, performed the first stage of the operation by turning down a large osteoplastic flap in the right frontal region. The patient lost very little blood during the operation, but two days later she died from heart failure.

Autopsy.—The head only could be examined. The cranium and dura mater were healthy. On removing the brain a large sarcomatous tumour about the size of a tangerine orange was found at the base. It was attached at the right side to the back of the basi-sphenoid. The carotid artery, optic chiasma, and both optic tracts were embedded in the tumour, which pressed upwards against the floor of the third ventricle, and caused marked flattening of the crura cerebri, especially on the right side. There was no enlargement of the sella turcica, and the anterior lobe of the pituitary body was normal in size. The growth was extra-cerebral, apparently arising from the region of the infundibulum. The arteries of the circle of Willis were small, and were compressed between the upper surface of the tumour and the under surface of the brain.

In this case the outstanding clinical symptom was the intense and deepening somnolence. The right eye was totally blind, and the temporal hemianopia of the left eye was specially difficult to recognise, owing to the small amount of vision that survived in the nasal half of the field. Yet the recognition of temporal hemianopia was of the utmost value in enabling us to arrive at a correct diagnosis. The tumour proved to be considerably larger than the clinical symptoms led us to anticipate. The weakness of the left lower face, cerebral in type, part of an incomplete left hemiplegia, indicated pressure on the pyramidal tract in the right cerebral hemisphere. This fact, together with the total blindness of the right eye, indicated that the growth was larger on the right side, and led us to approach it from that side. The presence of voracious appetite suggested pressure on the temporal lobe, there being a considerable amount of clinical evidence pointing to the existence of a centre for hunger and thirst in that region (Stephen Paget, "Essays for Students," 1898), and the autopsy showed that there was compression and displacement of the temporal lobes, especially on the right side. It would have been impossible, as the result proved, to remove the tumour successfully, owing to its great vascularity as well as its intimate adhesion to the base of the brain.

CASE 4.—A. O., a meat merchant, aged 34, had been noticed for six months past to be irritable in temper and abnormally drowsy, constantly falling asleep during the day. Three months ago he was married, and his wife, who brought him for examination, stated that he had never shown any sign of sexual desire. His vision had recently been noticed to be impaired in the right eye, and he had had occasional diffuse headaches of great severity, lasting for a few minutes at a time. He had occasional vomiting.

I saw him in the absence of Dr Ferrier, to whom I am indebted for the opportunity of examining the patient, and for permission to publish these notes.

Condition on examination, December 30, 1907.—The patient is a healthy-looking man. He sits in a chair, asleep, and resents being wakened. He is irritable, and objects to examination. The speech and articulation are normal. The optic discs are difficult to see, owing to patient's irritability, but there is distinct pallor of the right disc. The left pupil reacts to light, but not the right. The right eye is apparently totally blind, and there is temporal hemianopia of the left eye. The external ocular movements are normal; the muscles of mastication, the face, palate, and tongue all move normally. There is no cutaneous anæsthesia or analgesia. The motor functions of the trunk and limbs are normal. The knee jerks cannot be elicited.

A diagnosis of chiasma lesion due to pituitary tumour was made. The patient disappeared from observation for over a month. He then saw Dr Ferrier, by whose instructions an X-ray photograph was taken, which showed marked deepening of the sella turcica, the sphenoidal air-sinus being apparently invaded by the growth. The patient again disappeared from observation, but I learn that a week later he was operated on by Sir Victor Horsley, who exposed the pituitary region from above and removed tumour-tissue from a cyst in the region of the sella turcica. The patient subsequently died on Oct. 6.

Dr Ferrier informs me that the patient's mental dulness continued after operation, but that subsequently he had a sudden lucid interval, during which he woke up and made a perfectly sensible will.

The foregoing cases, taken together, illustrate several points of interest in the symptomatology of tumours in the region of the hypophysis or its infundibulum.

Firstly, it is to be observed that in most cases of hypophyseal tumour the general signs of intracranial pressure are relatively slight. Headache is often absent, vomiting is rare, and optic neuritis is generally absent, the tendency being rather to a primary optic atrophy.

It will be noted that in none of my four cases was there any sign of *acromegaly*, even though the symptoms of tumour had been present for many years (as in Cases 1 and 3). The relation between acromegaly and disease of the pituitary body is still far from clear. The researches of Herring (17 and 18) and others have given us a fairly precise knowledge of the development and structure of the hypophysis, its anterior lobe—an internally-secreting gland—being originally an invagination from the primitive pharynx, contrasting with the posterior lobe and infundibulum, composed of ependymal and epithelial cells, derived by outgrowth from the primitive neural tube, which produce, not an internal secretion, but one which is apparently poured into the cerebral ventricular system. Salvioli and Carraro (26), confirming the observations of Schäfer, have shown that experimental injection of pituitary extract in animals produces vaso-motor constriction and rise of blood-pressure, this secretion being derived from the posterior or nervous lobe of the gland. The action of the anterior lobe ot the gland is less firmly established.

Hypophyseal enlargement and deepening of the sella turcica are amongst the most constant anatomical signs in acromegaly, yet there is much difference of opinion as to the causal connection between acromegaly and hypophyseal disease. Marie (20), in his original description of acromegaly, attributes it to diminution of hypophyseal function. On the other hand, Massalongo (21) and, later, Tamburini (34) and Modena maintain that it is due to hyper-function of the gland, and state that it is usually associated with hypertrophy or adenomatous enlargement of that structure, not being produced by destructive malignant growths such as sarcomata, nor by tuberculous disease, nor by experimental destruction of the gland. Finally, another group of authors, comprising Gauthier (16), Arnold (1), Strümpell (33), Vassale (38), and Cagnetto (7), regard acromegaly as a disorder of general metabolism and the hypophyseal enlargement as a result and not the primary cause of the malady.

Out of a series of twenty-five cases of tumours of the hypophysis or its infundibulum which I have collected from recent literature, making twenty-five in all, including my own four cases, in which a histological examination of the growth was made, no fewer than seventeen had no signs of acromegaly. In the remaining eight patients who were acromegalic, one case (that of Petrén) (23) showed no tumour of the hypophysis, one (Starck) (31) was a carcinoma, one (Cagnetto) (6) was an adeno-carcinoma with metastases along the spinal cord, and the remaining five cases —(Cagnetto) (6 and 7), Ballet and Laignal-Lavastine (2), Widal, Roy, and Frouin (39), and Hochenegg (19)—were adenomata.

Another striking feature in my cases was the remarkable size to which a tumour may attain in the region of the hypophysis, infiltrating some structures and distorting others, without giving clinical evidences of local pressure. Thus the crura cerebri may be flattened out (as in Cases 1, 2, and 3) without producing phenomena of diplegia or even of hemiplegia. The cavernous sinus (as in Case 2) may be completely infiltrated by tumour-tissue without producing any clinical evidences of such infiltration. Even the optic chiasma, the structure that most constantly shows signs of involvement, may give no clinical indications until late in the disease, when it may suddenly become compressed, possibly by the occurrence of a hæmorrhage in the adjacent growth.

The classical visual signs of *chiasma lesion*, in the form of blindness of one eye with temporal hemianopia of the other, were present in three out of my four cases, and were of the greatest localising value. In the remaining case (Case 1) the patient's mental dulness was too great to admit of a definite statement as to the condition of the visual fields, and in this instance no focal diagnosis was arrived at. In another case (Case 3), although the patient's vision was reduced to a mere perception of light in the nasal half of one visual field, the recognition of this fact was of the utmost diagnostic importance. Case 2 teaches us that a tumour may attain to a large size and may completely envelop the chiasma, and yet the visual defects may be late in appearance; in this particular case blindness of one eye with temporal hemianopia of the other supervened suddenly, only three months before death.

Next to the presence of hemianopia of chiasmic type, perhaps the most striking fact in this series of cases was the occurrence of intense *drowsiness*, in three cases out of four. The drowsiness is usually intense and paroxysmal, the attacks of sleep lasting for hours, days, or weeks at a time. In Case 1, and less strikingly in Case 4, the drowsiness had curious intermissions, during which the patient woke up for a time and was apparently clear and alert.

Various explanations have been offered to explain the occurrence of pathological drowsiness in tumours of this region. Salmon (25), for example, has endeavoured to show that normal sleep is associated with a special internal secretion of the pituitary body, but the evidence which he adduces is far from convincing. Case 2 of my series, where the hypophysis itself was totally destroyed by sarcomatous growth, was the only one of the four that did not exhibit pathological drowsiness. Two of the other cases (Cases 1 and 3) were tumours of the infundibulum, the hypophysis itself being unaffected, yet drowsiness was an outstanding symptom. A more probable explanation of the drowsiness is that which refers it to upward pressure on the floor of the third ventricle, whether this be by direct pressure on the ventricle and Sylvian aqueduct, or whether, as Franceschi (14) suggests, it be the result of cerebral anæmia from compression of the arteries of the circle of Willis between the upper surface of the growth and the under surface of the brain. The curious intermissions in the drowsiness might be explained on either hypothesis, either by variations in the tension of a cystic tumour or by alterations in the direction of growth with relation to the superjacent vessels.

Amongst the other symptoms of pituitary tumour, we may call attention to the frequency in female patients of amenorrhœa (as in Case 1 of my own), and in male patients of loss of genital function (as in Case 4). This condition of so-called "pituitary eunuchism" has been noted in a large proportion of hypophyseal tumours, whether accompanied by acromegaly or not. In both sexes this diminution of genital activity is not infrequently associated with excessive adiposity. In male patients there is a curious tendency for fat to be deposited in the abdomen and in the nates, for the pubic hair to assume a female pattern, and for the mammary glands to undergo an abnormal development, all these signs indicating a tendency to revert from a male to a female type. In younger patients with pituitary tumours, excessive adiposity is commonly associated with delayed menstruation in girls (Cushing) (10), or with arrested sexual development in boys. The explanation of these profound and widespread changes is obscure. The condition of the ovaries or testicles in such patients does not yet appear to have been investigated.

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DESCRIPTION OF PLATES.

Fig. 1.—Infundibular growth (from a photograph).

Fig. 2.—Vertical mesial section of brain, showing obliteration of third ventricle.

Fig. 3.—Skiagram of skull, showing enlargement of sella turcica.

Fig. 4.—Base of brain (from a photograph), showing depressions caused by tumour.

Fig. 5.—Showing lobulated tumour attached to base of skull.

Fig. 6.—Showing depression in brain after separation of tumour.

Fig. 7.—To show tumour *in situ*.

A SIMPLE MODE OF CHARTING THE MOVEMENTS OF THE EYE MUSCLES AND THE DIPLOPIA CONSEQUENT ON THEIR PARALYSIS.

By N. BISHOP HARMAN, M.A., M.B. Cantab., F.R.C.S. Eng.;

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I WILL make no apology for bringing this note before the readers of the *Review*, for although to them the oculo-motor muscles and their defects will be as familiar as the A B C, it is quite otherwise with the medical student and the young practitioner; and it is to these and to those who teach them this note may appeal.

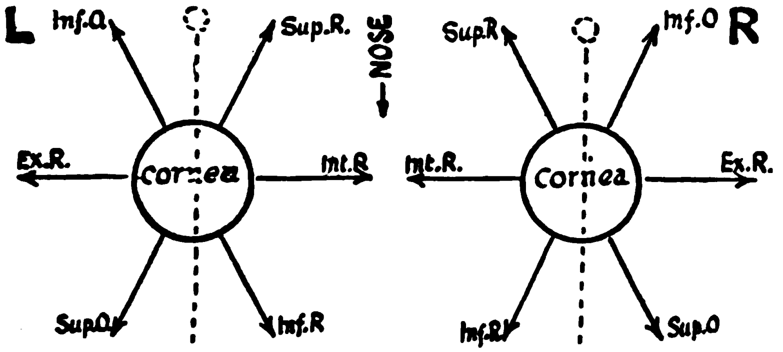
During a long experience of teaching at Cambridge and London I have found that there is scarcely anything which presents more difficulty to the average memory than these movements and the diplopia consequent on paralysis. This is especially true because cases are not sufficiently common to stereotype the facts upon the memory. There are published several excellent diagrams showing the lines of movement of one or more eye-muscles, and also diagrams illustrating the relations of true and false images in paralysis of these muscles; yet they do not meet the difficulty of the student, who flounders hopelèssly in his investigation of a case of paralysis. He may remember the anatomy of the muscles, and perhaps can reproduce an excellently devised mnemonic; but the connection of the two, so evident in the mind of the author of the mnemonic, is lost to the student. He is in a position not unlike that of an examinee at the Royal College of Surgeons of England, who, being asked the order of certain structures, replied he had forgotten, but he knew the tip! And then, on his being asked for that tip, he reeled off a jingling phrase in which the name of his examiner was treated with scant respect!

The difficulty found by most clinical students in recollecting the movements of the eye-muscles, or of applying their anatomical reminiscences to actual practice in eye-work, can be easily overcome by a little system of charting the movements of the eye-muscles. It requires the bare minimum of anatomical knowledge, and it follows a natural sequence which stimulates this minimum to a maximum growth. The following is my mode of teaching:—

Method of Charting.

Mark a circle to represent the cornea of each eye; mark a dotted vertical line to represent the "vertical meridian" of the eye; now mark as rays from these circles the direction of the rectilinear movements of each of the muscles. Begin with the easiest—the internal rectus—then mark in the external rectus. The superior rectus and the inferior rectus will follow above and below and to the inner side of the vertical meridian, for it will be remembered these muscles have a bony origin nearer the sagittal line than their insertion into the globe.

There remains only the obliques. These muscles differ from the recti in that they are both inserted into the posterior half of the globe; they pull from the inner wall of the orbit near the orbital margin to the posterior half of the globe; so the superior turns the eye down—the downcast, pathetic expression of the "patheticus"—and the inferior turns the eye up.



SUBJECTIVE OR PATIENT'S VIEW.

The diagram is complete, and it will be seen that the superior rectus and superior oblique are in line as antagonists, and similarly the inferior rectus and inferior oblique.

Rotary Movements.

Besides the rectilinear movements, four muscles rotate the eye: that is to say, four muscles help to roll the eye round an axis through the anterior and posterior poles of the eye, so that the vertical meridian is tilted towards or away from the nose. To demonstrate this, place a match, head upwards, on each of the dotted lines of the diagram: muscles that rotate the eye inwards bring the match-head towards the nose, as the superior rectus and superior oblique; those that rotate the eye outwards bring the match-head away from the nose, as the inferior rectus and inferior oblique.

Diplopia in Paralysis.

We may presume the student has made the requisite objective tests and proceeds to the subjective tests. He will map out the images of the candle on the usual nine-square chart. In doing this, I put coloured glass of equal light-absorbing quality in front of each eye, red over the right eye and green over the left eye. The patient is given two white sticks—pieces of firewood—and he is shown how to place them in the position of the red and green images he sees; so that he crosses them, or puts one above the other, as the case may be. The chart is first marked just as the sticks appear when held up by the patient—that is the surgeon's view. Then the chart is put up to the window and traced on to the back of the paper, to get the patient's view. When this is done, the phenomenon elicited may be examined and a diagnosis attempted.

The diagram of the movements of the muscles gives a plan of the false images seen in paralysis of any one of the muscles. Thus:—

1. Since the greatest diplopia lies in the direction of the action of the paralysed muscle, the arrows point to the region of the greatest diplopia.

2. To show the relative positions of the true and false images in single muscle paralysis, place a match vertically on dotted line of the vertical meridian; the match will represent the true image, and the four corner rays, marked Sup. R., Inf. R., Sup. Q., and Inf. O., will represent the relative position (in vertical and lateral displacement and tilt) of the false images produced in paralysis of each of these muscles of the corresponding side. In paralysis of the internal or external rectus, the false image would lie vertically through their respective arrow heads.

Steps in Diagnosis.

In working out the reasons for coming to a definite diagnosis I teach two stages :—

1. Is the diplopia crossed or homonymous ?—*i.e.* failure of a muscle turning the eye in or out. This is put first because the student can always demonstrate with his own eyes, provided he has binocular vision, crossed and homonymous diplopia, by fixing the eyes on a near or far object, and simultaneously viewing the doubled images of a far or near object respectively.

2. Where is the maximum diplopia ?—(*a*) Vertically; therefore failure of a muscle turning the eye up or down. (*b*) Laterally, to right or left side; and therefore of a muscle turning the eye to right or left.

These two tests usually suffice ; but two confirmatory tests may be used :—

3. Is one of the images tilted constantly in the line of a muscle rotating the eye in or out ?

4. In the region of greatest diplopia the image that lies farthest belongs to the paralysed eye.

Conclusion.

As I said at the beginning, if the student works up to his case by first plotting out the movements of the muscles from his knowledge of the anatomy in some graphic fashion, such as the chart I show here, and then applies this to the findings of the subjective examination of his patient, he will, in the great majority of cases, come by easy stages to his diagnosis. I do not pretend that this method will solve all the problems that will present themselves to him ; for that he must rely on extended experience : for it is obviously impossible to take into account in any dogmatic statement the exceptions that may occur; or, to confuse his mind at the outset by telling him of the different degree of effective movement a given muscle is capable of, according as the globe looks straight forward, or is turned into line with the line of most effective action of that muscle.

From a fairly wide experience, I have found that teaching a student in this fashion speedily cultivates an interest in the subject, which leads him to discover the exceptions for himself, and therefore to a greater gain.

Abstracts

ANATOMY.

ON THE FIRST PHASES OF DEVELOPMENT OF PRIMARY (187) NEUROFIBRILS IN THE EMBRYO OF CHICKENS.

(Quelques recherches sur les premières phases de développement des neurofibrilles primitives chez l'embryon du poulet.)
CESARE GERINI, *Anat. Anz.*, No. 6-7, 1908, S. 178.

THE writer gives the history of the development of the three main theories and the chief facts on which they are based. In order to contribute to the study of this subject, he has examined over 200 chicken embryos, varying in age from 18 to 240 hours. He used Cajal's method, diluting the salt of silver in order to render reduction less rapid, and he found the results very satisfactory, the main defect of metallic impregnations—that of insufficient and inequal penetration—being much less in embryonal than in completely developed tissue. He describes his results in detail, and thinks himself justified in drawing from them the following conclusions:—

1. In the embryo of the chicken the neuroblasts give rise to neurofibrils from about the fortieth hour.

2. The neuroblasts thus acquire a spindle form, which they retain until about the sixth day.

3. The neurofibrils appear in the first place at the two poles of the neuroblast; they then increase in size, and form the axis-cylinder and the protoplasmic expansions.

4. Each neuroblast gives origin to its own system of neurofibrils, and to it only.

5. The nervous element thus formed never contracts relations of continuity with other elements.

6. The endocellular reticulum is only formed after the eighth day.

7. The collateral neurofibrils emerge as branches of a single neurofibril.

8. The nerve-cell represents an embryological unity.

ALEXANDER BRUCE.

A CONTRIBUTION TO OUR KNOWLEDGE OF THE FINE
(188) **STRUCTURE OF THE HYPOPHYSIS. (Contributo alle conoscenza della fine struttura dell' Ipofisi.)** E. SAVAGNONE, *Riv. Ital. di Neuropat., Psych., ed Elettroter.*, Vol. ii., Fasc. 1, 1909.

THE author has traced nerve fibres from a group of cells situated behind the optic chiasma through the infundibulum to the posterior lobe of the hypophysis where they form a reticulum. From this reticulum fine fibres pass into the anterior lobe and ramify amongst the glandular cells. The posterior lobe contains many neuroglial cells, and to these he attributes an important antitoxic function. There are also granular cells similar to cells which are seen in various internal secretory glands; their function is unknown. No nerve cells were seen in the hypophysis itself. R. G. ROWS.

THE MARCHI METHOD. (La méthode de Marchi.) S. J. DE
(189) LANGE, *Le Névraxe*, Vol. x., Fasc. 1, p. 81, 1909.

THIS paper is a critical review and experimental study of the conditions to be observed in order to obtain satisfactory staining by Marchi's method, and of the precautions necessary in interpreting the results. It applies mainly to experimental work. The animals should be killed about twelve days after the operation, the Marchi granulation showing up best between the tenth and fourteenth days. Adult animals must be employed and the operation aseptic. Any inflammation, no matter how slight, may cause a destruction of nerve fibres, with consequent diffuse staining by the osmic acid, while with too young animals one may even normally get typical Marchi dots. The handling of the nervous system must be very gentle; it is preferable to commence hardening before removing it from its bony coverings. Hardening in formalin is very risky; the best method seems to be equal parts of 10 per cent. formalin and of Müller's fluid (or 3 per cent. pot. bichrom.) for two to three days, then pure Müller's fluid. Change several times, then transfer to equal parts of Müller's fluid and 1 per cent. osmic acid solution. Keep in the dark, in hermetically sealed vessels, seeing that the position of the pieces of tissue is changed occasionally. Keep in this for ten days, or, if in the oven, for a shorter period. A dilution of 1 in 10 may also be employed, staining for a long period, or sections may be stained in this strength of solution in twenty-four hours.

Sections must be studied serially to show the connection of the fibres, which one expects to find degenerated, with the site of the lesion. The use of celloidin is indispensable; it has no drawbacks if the blocks are passed pretty quickly through the various stages, especially the alcohol and ether. Differentiation by the Pal method is not advisable. The real Marchi staining of degenerated fibres is characterised by the presence of large irregular black dots, following each other in series, with short interruptions between, in longitudinal sections like a string of black beads on a chain. Of the various modifications, Hamilton's and Busch's are probably the best, but neither are equal to the original Marchi method.

J. H. HARVEY PIRIE.

PHYSIOLOGY.

EXPERIMENTAL STUDIES IN THE INNERVATION OF THE (190) SKIN.

WILFRED TROTTER and H. MORRISTON DAVIES, *Journ. Physiol.*, Vol. xxxviii., Feb. 9, 1909.

THIS paper embodies some of the results and conclusions of investigations carried out upon a number of areas of defective sensibility produced by the division of certain cutaneous nerves in one or the other of the authors.

The following seven nerves were divided: the internal saphenous, the great auricular, three branches of the internal cutaneous of the arm, and a branch of the middle cutaneous of the right thigh of one subject and of the left thigh of the other. It was found that the nerves could be exactly located beforehand by exploring the surface with a faradic current by means of a finely pointed electrode. When the point of the electrode was exactly over a nerve a characteristic fluttering sensation was produced in the distal extremity of the area supplied by that nerve. The operations were performed under local analgesia: the required nerve was freed for a short distance, a quarter of an inch of its length was excised and the two ends sutured together.

Investigations were made also on other areas of loss of sensibility obtained by the local anæsthetisation of the nerves supplying them.

The details of the methods employed in the investigations of the areas and in the recording of the results are given at length.

In testing sensibility to touch three methods were used. For detecting the minutest changes the method of stroking touches was found to be of great value. This has already been described and some of its clinical applications given in an article in this *Review* (October 1907). The method allows of the detection of the minutest qualitative changes, but for quantitative estimation of different grades of loss other methods are necessary, such as the use of cotton-wool or a camel's-hair brush—minimal pressure methods—or von Frey's æsthesiometer—graduated pressure method.

For the determination of the sensibility to pain an algometer was devised with which the strength of the stimulus could be regulated by the resistance to bending of a von Frey hair.

Division of a nerve was followed by defects of four sensory and three motor functions. In each case there was a central area of total loss and a surrounding area of partial loss. In the case of touch the central area of maximal hypoæsthesia was bounded by a narrow zone of transitional hypoæsthesia, and beyond this was a wider zone of minimal hypoæsthesia in which the changes were almost entirely qualitative.

The existence of true touch or moving contact as a separate and specific sensation totally different from true pressure or static contact is insisted on.

In testing with compasses no specific loss of the capacity of recognising two points was found apart from tactile defects.

The alterations of sensibility to cold showed the same arrangement as the alteration of sensibility to touch. There was a transitional zone between that part of an area anæsthetic to cold and that which reacted normally. Here no sensation more intense than that of cool was experienced, while in the central zone ice might feel either as indifferent or "warm." In testing with temperatures of 50° C., however, while the distinction between hot and warm or indifferent was quite distinct, it was found impossible constantly to distinguish between warm and indifferent.

The onset of recovery was announced by a vague feeling of discomfort in the area. Soon after this, coarse stimuli applied to the upper part of the area produced a response felt not locally but in that same spot in the periphery of the area where the fluttering sensation elicited by faradising the intact nerve was felt. In the earlier periods of recovery certain characteristic features were manifested. The sensations of cold and pain were intensified; touch when felt was normal, while the sensation hot was absent and temperatures which normally should have produced it now gave pain. In addition, the sensations of touch, cold and pain were felt at the point of application, referred to the periphery or in both places simultaneously. Later on as the signs of regeneration extended down the area, reference of sensation from the more distal parts might occur to the proximal boundary, to the point of nerve suture, or the reference might be across the area (peripheral reference, proximal reference, diametric reference). Heat was never referred, but temperature stimuli which on normal spots gave rise to the sensation hot would in the earlier stage of recovery give a local and referred sensation of pain. Not till recovery was far advanced could the sensation hot be felt in the part, and *pari passu* with this return of sensation was the disappearance of the referred pain of such stimuli and a diminution in the intensification of the sensation cold and pain. Of the peculiar characteristics of an area in process of recovery the last to disappear were the reference phenomena and the alterations in sensibility to the stroking touch.

In their general considerations the authors show that while many of the facts obtained by their investigations agree with those of Head, they are unable to correlate them with his hypothesis of an epicritic and protopathic system of nerve fibres. The principal facts opposed to this hypothesis are that touch recovers simultaneously with pain, though at first in a distinctly hypoæsthesic form, and that the qualities peculiar to the "intermediate zone" of Head are quite distinct from those found in an early recovering area. They find that hyperalgesia is present at two distinct periods. The first commences on about the tenth day and lasts for two or three weeks. The hyperalgesia at this period is not uniform, but occurs in patches, some of which even may be present in the centre of an apparently otherwise totally analgesic area. These patches correspond closely with the larger veins of the part, and the authors suggest as an explanation of the phenomenon that during the process of degeneration of the nerve certain toxic substances are produced which cause irritation of the veins. This may have a direct bearing on certain forms of trophic lesions. After the subsidence of the hyperalgesia there is a period during which the area shows a central zone of analgesia surrounded by a zone of hypoalgesia and no hyperalgesia is present. Lastly, when regeneration begins, a different kind of hyperalgesia appears; this is uniform, closely related to the previously defective areas, and very persistent.

Regeneration, therefore, can be at once recognised clinically by the reference of the sensations of touch, cold and pain, by the intensity of the last two sensations and by the absence of the sensation hot.

On the phenomenon of reference the hypothesis of Head is regarded as throwing no light; the hypothesis of Langley, that reference is due to malapposition of the cut ends of the nerve, has many points in its favour, but certain aspects of the condition are not accounted for. The authors put forward the view that these phenomena are in some way connected with conditions special to regeneration of the nerve sheath and fibre.

With regard to the form of thermal defect described by Head as loss of sensibility to "intermediate temperatures" with retention of sensibility to extreme temperatures, the authors point out that this is the form which a general reduction in thermal sensibility may be expected to take. They have found that regions showing it do not, in fact, retain their full sensibility to extreme temperatures. Temperatures which should produce the sensations hot and cold respectively are indeed recognised, but only as warm and cool.

The problems of the peripheral mechanisms of sensation are discussed at some length. AUTHOR'S ABSTRACT.

THE COURSE OF SENSORY IMPULSES IN THE SPINAL CORD.

(191) Carl D. Camp, *Journ. of Nerv. and Ment. Dis.*, Feb. 1909, p. 77.

After mentioning the various spinal diseases in which dissociation of sensation has been met with, the author makes some remarks as to the position and relations of fibre systems which conduct sensory impulses, derived partly from a study of the literature and from a number of cases which he has personally examined. The details of six cases are recorded, with an account of the pathological changes in two instances. His conclusions appear to contain nothing new. Edwin Bramwell.

A CONTRIBUTION TO THE PHYSIOLOGY AND PATHOLOGY (192) OF THE POSTERIOR ROOTS OF THE SPINAL CORD.

(Beiträge zur Physiologie und Pathologie der Sensiblenwurzeln des Rückenmarks.) R. Balint, *Ztschr. f. klin. Med.*, B. 67, H. 1-3, p 7.

The closer attention which has been devoted to the study of sensation within recent years has widened our knowledge considerably, but has also brought forward problems hitherto only partly solved. Among such are the distribution of the sensory changes in tabes, and the recent observations of Muskens on sensory skin disturbances in epileptics, which he noted before the convulsive attacks and which persisted for a longer or shorter period, and in greater or less degree after the seizure. Analysis of the changes observed shows them to be similar in character in the two diseases, consisting in delayed or diminished perception of painful stimuli. Further, the distribution of the areas within which such changes are observed corresponds. Two such areas are recognised, an upper and a lower. The first of these affects chiefly D I-IV segments; the second L V and S I. As a rule the changes in the dorsal segments are the more obvious, the upper limit being more sharply defined than the lower.

The author has investigated the sensory conditions met with in a series of cases exhibiting retro-bulbar neuritis of toxic origin, and one case of cerebellar tumour. He compares the results of this investigation with those he obtained from the examination of a series of normal individuals. Twenty-three cases of the first group were investigated—thirteen were alcoholic, six due to nicotine, and four of mixed origin. In seventeen he was able to demonstrate definite sensory disturbances and to exclude the presence of tabes. The sensory changes affected chiefly the pain sense, but temperature appreciation was disturbed to a slight extent. Touch was unaffected. The chief characteristic of the change was delayed or diminished appreciation of pain.

This was met with in a definite segmental distribution, similar to that described by Muskens in epileptics, and consisting of two groups: (1) D I-IV and (2) L V and S I. In some instances the lower group was more widely affected, but L V and S I were in all instances the most involved and the last to clear up.

To explain, if possible, the predilection of these segments to be affected in such varied conditions as tabes, epilepsy, and certain toxic states, the author next proceeded to test the sensibility for pain in normal individuals. He found in the majority of those tested that he could establish a definite hyperalgesia in the same segments which exhibited hypalgesia under the circumstances described. The explanation of this hyperalgesia is difficult, especially for the lower segments. For the upper, the author inclines to the opinion that the connection of these segments, as demonstrated by Head, with the heart and the aorta may determine the slight hyperalgesia which they exhibit.

Comparing the results of his observations he finds those segments which are normally hyperalgesic exhibiting hypalgesia under pathological conditions. The author tentatively adopts Edinger's exhaustion theory to explain this.

C. M. HINDS HOWELL.

THE SENSORY INNERVATION OF THE UTERUS. (Zur Lehre (193) von den sensiblen Innervation des Uterus.) SCHLESINGER, *Wien. klin. Wchnschr.*, Feb. 4, 1909, p. 151.

PROFESSOR SCHLESINGER founds his conclusions on a typical case of syringo-myelia. Shortly, the case is as follows :—

Patient, over 30, had suffered about fifteen years from disturbance of pain and temperature sensibility. She had been pregnant twice and did not feel the movements of the fœtus during either pregnancy. The first labour was quite painless, the second only painful during the last quarter of an hour, when a rupture of the perineum occurred. Both children were alive and healthy and normal in every way.

Libido sexualis absent. Menstrual history regular. No sensory disturbance of either bladder or bowel, no motor disturbance of bladder ; slight weakness of the sphincter ani. There is a kyphosis in the dorsal region. From the costal arch to the symphisis the tactile sensibility is absolutely unimpaired. Sensibility to pain is lost on the right side of abdomen from the sternum to the level of the ant. sup. spine. Then follows a zone about a centimetre broad with lessened sensibility to pain. Below this, pain sensibility is normal. On the left side analgesia reaches to just below the level of the umbilicus. From the umbilicus to the level of the ant. sup. spine there is lessened sensibility to pain, and below this level the condition is normal. Temperature sensibility is absent on the left side from the mamma downwards to the ant. sup. spine, and below that it is dulled. Only a very small area above the symphisis is normal. From the level of the first lumbar vertebra behind there is analgesia on both sides, with thermo-anasthesia on the left side and diminution on the right side. Pressure sensibility is undisturbed on the right side and percussion of the abdominal wall is perceived. On the left side the pressure sense is greatly disturbed. All varieties of sensibilities are undisturbed in the labia, perineum and around the anus.

The following observations were made six weeks after delivery :—

The cervex is insensitive to the vulsellum, and dilatation with the smaller numbers of Hegar gives no pain ; the highest numbers caused a little pain. Patient felt the movements of the dilators as movements, but not as pain. There was pain on curetting the uterus, more perceptible in the posterior wall, especially on the right side.

After consideration of various cases—especially that of Balint and Benedikt, in which there was a destruction of the sacral portion of the cord and lowest lumbar segment, accompanied by a loss of labour pains, but no loss of sensibility to the movements of the child—he puts forward the following conclusions :—

(1) There is a specific sense for the movements of the fœtus which takes origin, either in the wall of the uterus or its peritoneal covering, and reaching the spinal cord by way of the sympathetic may, in some cases of spinal disease, become isolated from the other uterine sensations or may be lost with them.

(2) This special sensibility for child movements can be lost whilst tactile sensibility of the abdominal wall remains undisturbed.

(3) The central tracts for this special sensibility run in the cord, probably collected in a bundle, but not in the same bundles with the touch sensibility of the abdominal skin.

(4) The tracts for this special sensibility enter the spinal cord above the sacral portion, but the nerves of labour pains enter the sacral portion itself.

(5) The central tracts for labour pains run probably beside the tracts for the pain sensibility of the skin.

(6) Specific feeling for child movement and specific uterine pain can be obliterated in a partial transverse lesion of the cord (lesion of the posterior cornua, perhaps also the neighbouring white substance).

(7) The destruction of this sensibility (child movement) need not be accompanied by severe bladder and bowel disturbance.

(8) There is a disassociation of uterine sensibility which is central in nature; there can be either isolated loss of perception of fœtal movements or of labour pains. HUGH S. DAVIDSON.

FATIGUE OF MEDULLATED NERVE. (Die Ermüdung des markhaltigen Nerven.)

(194) W. THÖRNER, *Zeitschr. für allgem. Physiol.*, Bd. 8, Heft 5, 1908, pp. 530-562.

FRÖHLICH's proof of fatigue in medullated nerve fibres was obtained during narcosis or asphyxia of the nerve, the response of an attached muscle being taken as an index of the activity of the nerve. Thörner has investigated with a capillary electrometer the electrical response of partially asphyxiated and of normal nerve at successive intervals during a long period of rhythmical stimulation. Fatigue changes were readily demonstrated in partially asphyxiated nerve, and with more difficulty, but nevertheless definitely, in nerve kept exposed to a moist atmosphere containing oxygen. He has thus supplied another proof of the fatigability of medullated nerve.

JOHN TAIT.

STUDIES IN ASPHYXIA AND RECOVERY OF NERVE IN FLUIDS. (Studien über die Erstickung u. Erholung des Nerven in Flüssigkeiten.)

(195) HANS FILLIÉ, *Zeitschr. für allgem. Physiol.*, Bd. 8, Heft 5, 1908, pp. 492-507.

THIS, along with the succeeding two papers, emanate from Verworn's laboratory, from which has already appeared a number of researches on questions regarding the nutrition of nerve cells and of nerve fibres, more especially the problem of oxygen supply.

In 1902 von Baeyer showed that a piece of frog's nerve subjected to the action of an indifferent O_2-free atmosphere eventually loses its conductivity, which it regains when O_2 gas is once more supplied. Fillié repeated these experiments, using, however, an O_2-free fluid (·8 per cent. NaCl solution) instead of an O_2-free atmosphere, and found that conductivity becomes abolished in similar fashion, only after a longer interval. On re-admission of O_2 in solution the nerve recovers.

When a portion of nerve subjected to an O_2-free atmosphere has been brought to the verge of complete loss of function, washing with O_2-free saline solution causes a slight temporary improvement in the excitability of the affected portion before ultimate loss of conductivity occurs. This phenomenon is explained if one assumes that a nerve during the process of asphyxiation forms metabolic products which themselves exercise a depressing action; the washing with O_2-free solution removes these products and thus temporarily improves the function of the nerve.

JOHN TAIT.

ON RECIPROCAL INNERVATION OF ANTAGONISTIC MUSCLES; (196) 12TH NOTE. PROPRIOCEPTIVE REFLEXES. C. S. SHERRINGTON, *Proc. Roy. Soc.*, Series B, Vol. lxxx., No. 544, p. 552.

THE vasto-crureus, a muscle which exhibits marked tonus in the decerebrate condition is, with the nerve supplying it, left intact in the decerebrate cat. All other muscles acting on the knee are paralysed by section of their nerves. If one of the flexor muscles is thrown into contraction by faradisation of its nerve distal to the point of section, the tonic contraction of the vasto-crureus is overcome and the knee flexed. When the stimulation is discontinued and the contraction of the flexor ceases, the knee is found to remain flexed. Some change in the tonic contraction of the extensor has been produced by the forced stretching of that muscle, and the same result may be obtained by flexing the joint of the preparation by hand. This cannot be attributed to centripetal impulses from the flexor muscles whose nerves have been cut, but is due to afferent impulses from the extensor muscle itself, by means of which the stretch produces this "lengthening reaction," a reaction which fails when the roots containing these afferents are severed. Further, the stretch causes a contraction in the extensor of the crossed knee. Sometimes the increase in tonic length is followed by increased contraction (successive spinal induction).

If, in the same preparation, after the lengthening reaction has been produced, reflex extension is elicited through an afferent nerve, the extensor contracts and remains contracted after cessation of the stimulus. The same result—a new shorter tonic length—is produced by passively approximating the ends of origin and insertion of the muscle. This "shortening reaction" is also reflex.

It is evident that in decerebrate rigidity the tonus of the reflex arc is regulated in two opposite directions, lengthening and shortening, by impulses from the muscle itself. These reactions assist the control of the muscle by its antagonist in the play of opposed movements at the joint. W. A. JOLLY.

RECIPROCAL INNERVATION OF ANTAGONISTIC MUSCLES; (197) 13TH NOTE. ON THE ANTAGONISM BETWEEN REFLEX INHIBITION AND REFLEX EXCITATION. *Proc. Roy. Soc.*, Series B, Vol. lxxx., No. 544, p. 565.

IT has been maintained by v. Cyon with regard to the heart that stimulation of the excitatory and inhibitory nerves together brings about an algebraic summation of the effects obtained from the two nerves singly. A similar question arises in regard to the reflexes obtaining in skeletal muscles.

If a preparation of the knee joint be made in the decerebrate animal in such a way that the vasto-crureus is the only muscle left intact as described in the author's twelfth note, this muscle may be inhibited by excitation of the central end of the peroneal nerve on the same side and is caused to contract by stimulation of the popliteal nerve on the opposite side, both nerves being severed at the knee.

When these antagonistic nerves are stimulated together fairly strongly, the nerve on the same side is found to be prepotent, but the stimulation applied to the two nerves may be so graded that the influence of the contralateral nerve becomes prepotent.

When the inhibitory influence is elicited weakly the muscle relaxes; if now the nerve causing excitation be stimulated the muscle contracts to a certain degree at which it persists during combined excitation of the nerves, and contracts further when the inhibitory stimulus is discontinued. Consonant results are obtained when the nerves are excited in the reverse order. The contraction obtained when the nerves are excited together is a compromise between the two influences of excitation and inhibition simultaneously at work.

The observations on these reflexes in skeletal muscles thus accord with v. Cyon's conclusions in the case of the heart. The nerves are true antagonists, the reflex arcs acting in opposite directions at the same point of application in the excitable apparatus.

W. A. Jolly.

STRUCTURE AND FUNCTION OF STRIATED MUSCLE. J. S. (198) Macdonald, *Quart. Journ. Experiment. Physiol.*, Vol. ii., pp. 5-89.

On a basis of new evidence collected by microchemical methods the author has attacked the proposition that muscular contraction is the immediate outcome of a combustion process initiated by the arrival of a nervous impulse, and has thus also utilized the evidence collected by Bürker and others who have observed unexpected divergences between muscular work and concomitant heat production. Microchemical methods such as have been introduced by Macallum are used to demonstrate that the first consequence of excitation is an outburst of inorganic salts from some position of restraint which originates a series of electrical phenomena, and also differences in osmotic pressure, capable of producing the changes in shape and tension characteristic of contraction. The author has indicated the manner in which these initial physical changes must be considered as provocative of chemical changes such as are observed. Some care has been taken to point out that these ideas are in no way antagonistic to the fact that chemical change is the source of energy, and to make it evident that oxidation processes add to a store of potential energy within the muscle in some position apart from the store of oxygen and oxidisable material.

To knit together the facts of muscular contraction arranged in this new order, the author has made use of an hypothesis as to the state of colloidal solution and the variations in condition of solutions produced by changes in this state which he had previously adopted in reference to observations upon the phenomena of the nervous impulse. He has shown that the phenomena of nerve throw light upon the phenomena of muscle which become intelligible viewed as due to a simple difference between the material in solution in the working parts of these different tissues. From this hypothesis by steps logically derived from the primary assumptions of the hypothesis it is possible to explain the difference between the nerve, the nerve cell, the sarcoplasm and the sarcostyles of muscle. Not only are differences in function thus derived, but also differences in structure.

Of major interest from the neurological point of view are the chapters in which an attempt is made to explain the formation of membranes within the muscle fibre, possessed of qualities comparable to the "synapses" between neurones; and to explain the varying states of excitability of the sarcoplasm of the muscle and also the materials of the nerve cell as due to an antagonism between two materials in colloidal solution reacting in opposite directions on the receipt of the negative electrical charge transmitted by the nervous impulse. In the nerve cell attention is drawn to a neurofibril, or nerve fibre, material which is precipitated, and to the Nissl granule material which is dissolved on receipt of this charge. AUTHOR'S ABSTRACT.

MUSCULAR TONE: ITS VARIATIONS AND MEASUREMENT (199) BY A MYOTONOMETER. (Variations et Mesure du Tonus musculaire à l'aide d'un Myotonomètre.) P. HARTENBERG, *Presse Méd.*, Jan. 20, 1909. Masson et Cie, Paris, 1909.

AFTER pointing out in this pamphlet that we have not in our possession a practical apparatus for measuring accurately the clinical variations in muscular tone, Hartenberg goes on to elaborate the principle and to give a description of the apparatus.

The principle consists in the measurement of the angle of forced extension of the hand on the forearm obtained by a definite traction. With a definite extending traction force the angle of extension of the hand on the forearm is in proportion to the tone of the flexors. The traction force must be the same in successive tests in the same individual, but in different individuals it must vary with the muscular power. Hartenberg uses as a traction force a tenth part of the muscular power as previously determined by a dynamometer in terms of kilogrammes.

The apparatus consists of a small board to which the palmar surface of the hand is fastened by a leather strap, which also encircles one limb of a compass graduated to measure angles. The traction is exercised by a 10-kilogramme spring dynamometer graduated in tenths of a kilogramme, and this dynamometer is attached to an ingeniously arranged sliding screw which fixes the compass to the hand-piece. The sliding screw is so arranged that no matter the size of the hand the point of application of the traction force is always at the same distance from the apex of the triangular compass. The results are thus quite accurate, and comparable readings can thus be obtained in different cases.

After explaining the application and manipulation of the instrument Hartenberg comes to the following conclusions regarding muscular tone :—

A. *In Physiological States.*—The angle obtained by a traction force of the strength of a tenth part of the muscular power is about 95°. Above 100° and below 90° are abnormal.

(1) The tone is higher in the morning than in the evening.

(2) The tone is lowered by general fatigue.

(3) The tone is increased by muscular work. This hypertonia is of interest in relation to writers' cramp. It is followed by a hypotonia, so that there is a spastic fatigue and a flaccid fatigue of muscles.

(4) Stretching a muscle diminishes its tone—there is a fatigability of tone.

(5) Faradisation, warm baths, strychnine, caffeine, etc., increase the tone.

(6) Tone is by no means in proportion to the dynamometric muscular power.

B. *In Pathological States.*—Considerable variations in tone are met with. There is increase of tone in disseminated sclerosis, in lateral sclerosis, etc., and diminution in tabes, the myopathies, flaccid hemiplegia, chorea and certain neurasthenic conditions.

Hartenberg promises later a special study of muscular tone in these various affections. W. KELMAN MACDONALD.

IS THE ANÆSTHESIA AND MOTOR PARALYSIS CAUSED BY (200) MAGNESIUM SALTS DUE TO ASPHYXIA? MELTZER and AUER, *Amer. Journ. of Physiol.*, Vol. xxiii., No. 3, Dec. 1, 1908.

THE authors have shown clearly that asphyxiation is not the primary cause of the anæsthesia, muscular relaxation, and abolition of reflexes which follow the injection of efficient doses of magnesium salts. J. A. GUNN.

FATIGUE AND RECOVERY OF THE SPINAL CORD—PERFUSION EXPERIMENTS ON STRYCHNINISED FROGS.

(201) **(Ermüdung und Erholung des Rückenmarkes. (Durchspülungsversuche an Strychninfröschen.))** ALEXANDER LIPSCHÜTZ, *Zeitschr. für allgem. Physiol.*, Bd. 8, Heft 5, 1908, pp. 512-529.

THIS communication is supplementary to the well-known work of Verworn on fatigue and recovery of the nerve centres in strychninised frogs. The main feature of Verworn's work was to emphasize the role played by O_2 in the activity of the nerve centres. He showed that there are "depots" of O_2 in the nerve cells; during activity these are drawn upon; at the same time certain waste products are formed. The ultimate fatigue which supervenes in strychinine poisoning is due partly to accumulation of waste products in the cells, partly to lack of O_2.

Lipschütz has repeated much of Verworn's work, taking elaborate precautions to ensure the complete absence of O_2 from the perfusion solution. He verifies Verworn's conclusions and defends his work against criticism by Ries and by Jacoby, each of whom, on the ground of certain doubtful experiments, had questioned the supreme importance of O_2 as a restorative for exhausted nerve cells.

JOHN TAIT.

PSYCHOLOGY.

THE EXPERIMENTAL STUDY OF JUDGMENT AND THOUGHT.

(202) **(L'Étude Expérimentale du Jugement et da la Pensée.)** B. BOVET, *Arch. de Psychol.*, Oct. 1908, p. 9.

THIS is a criticism of the methods used by certain German writers in the experimental study of the more complex mental processes. It is a minute analysis of these methods, and so does not lend itself to a summary. His conclusions are somewhat on the same lines as those of Wundt, and are on the whole condemnatory. The weaknesses of the method lie in their being incapable of repetition for purposes of verification, and in the subject of the experiment being the critic of his own processes. Bovet, however, considers that the results may furnish useful information regarding some of the mental processes of individuals—for example, the types of ideation, imagination, and memory. To do the paper justice, both the experiments and the criticism should be read together. JAS. MIDDLEMASS.

PATHOLOGY.

FINE CEREBELLAR LESIONS. (Lésions fines du Cervelet.)

(203) J. NAGEOTTE and M. LÉON-KINDBERG, *Comptes rend. des séances de la Soc. de Biol.*, Vol. lxv., pp. 517 and 551.

Two cases are here recorded. The first was a case of family idiocy, with cerebellar atrophy and degeneration of the posterior columns, the pyramidal tracts and the direct cerebellar tracts; but the description is limited to that of the dendrites of the Purkinje cells, which appeared to be the cause of the cerebellar atrophy. In the most atrophied lamellæ they were practically absent. In the less atrophied lamellæ, owing to the thinness of the molecular layer, many of the arborisations of the cells were turned on themselves, having an appearance like a weeping willow. The branches thus deformed had nodosities of various sizes on them; secondary branching at the site of the nodes was excessive in amount. These nodes in their turn contained in their centre a series of *enclaves*, granules, and spherules. These lesions were limited to the dendrites, but the rest of the neurone had undergone consecutive changes.

They regard the branching as evidence of an irritation preceding the cellular destruction. Tentatively they suggest that the nodosities may be either deposits of cellular destruction, but in an uncommon site for pigmentary deposition; or possibly some form of parasite.

The second lesion described is a fusiform swelling of the axis cylinders of the Purkinje cells; this they have noted in four cases, two with cerebellar atrophy, two with no morphological change. The axis cylinders showed, a very short distance from the cell, a swelling often attaining a size equal to that of the cell body. Sometimes there were several swellings further along. In the milder degrees the axis cylinder pursued a normal course distal to the swelling, in more advanced cases it had apparently disappeared, and there were left only hypertrophied collaterals, turning back, as in the normal state, to form part of the plexus round the Purkinje cell bodies. The cells apparently kept alive through the stimulus of a sort of vicious circle. This condition, they consider, is probably the result of some preceding pathological process, a malformation consecutive to some lesion rather than a lesion *per se*.

J. H. HARVEY PIRIE.

THE EFFECTS OF THE ACTION OF ROENTGEN RAYS ON THE (204) NERVE CELLS OF THE SPINAL CORD. (Gli effetti dell' azione dei raggi Roentgen sulle cellule nervose del midollo spinale.) GIOVANNI DONZELLO, *Il Pisani*, Vol. xxviii., Fasc 3, 1907.

TWO groups of guinea-pigs were exposed to X-rays at a distance of 15 cm. during 16 to 180 minutes. In the case of the first group medium strength of rays was used, a current of 2 amperes with 50 interruptions a second, and a spark length of 12 cm.; in the second group hard tubes were used, with a current of 7 amperes with 30 interruptions a second, and a spark of 30 cm. The animals were killed at the end of the experiment. At the cessation of the experiment immediate paraplegic symptoms were observed in all cases, but if the animals were kept alive a few hours these passed off, and were thought to be possibly due to the cramping action of the animal holder. The nervous system was investigated by thionin coloration and by the fibrillar method of Cajal and Donaggio. These last methods showed no very striking change. In some cases the fibrils appeared swollen and run together. Thionin coloration showed frequent tigrolysis, a punctate appearance of the cell body, and often slight vacuolisation. The nuclear membrane often appeared to be ruptured and the nucleus vacuolised.

F. GOLLA.

THE MINUTE CHANGES OF THE NERVE ELEMENTS IN (205) PROGRESSIVE PARALYSIS. (Le fine alterazioni degli elementi nervosi nella paralisi progressiva.) M. SCIUTI, *Ann. di nevrolog.*, Anno xxv., F. 6.

THE application of the methods of Cajal and Donaggio have very much enlarged our knowledge of the intimate structure of the various elements of the nervous system and of the changes which they undergo in different morbid conditions. In this paper the author has described the alterations which occur in the nerve elements in progressive paralysis as demonstrated by these methods, and also by those of Nissl and Weigert. The inquiry included the examination of the peripheral nerves, spinal roots, spinal cord, medulla oblongata, pons varolii, cerebellum, and cerebrum in ten cases of progressive paralysis, two of which exhibited tabetic symptoms. The author expressed the opinion that there are no specific changes of the nerve elements which can be considered as pathognomonic of this disease, but, on the other hand, he suggests that the wide distribution, the multiplicity and the gravity of the lesion of the nerve cells and nerve fibrils enable us to exclude most of the cerebral diseases other than progressive paralysis.

The cellular changes include cellular atrophy, pigmentary degeneration, fatty degeneration, fibrillysis, chromolysis, granular disintegration, vacuolar degeneration and coagulation necrosis. Examples of all these various alterations are commonly found in the same area.

The chromolytic and fibrillytic changes may be acute or chronic, and the former appear before the latter. The alterations of the fibrils have been divided by Marinesco into degenerative and disintegrative, but the author says that no line can be drawn between the two, and, in fact, both changes may be present in the same cell. In some cells the alterations appear first around the nucleus, in others at the periphery, and in others in the middle portion, but the fibrils around the nucleus are more resistant as a whole. When the central portion is affected the nucleus also exhibits atrophic and degenerative alterations, and the fibrils of the axiscylinder become disintegrated.

It is difficult to explain these different alterations, but they are probably dependent on the resistive powers of the various nerve elements, and on the intensity, the quality and the duration of the chemical or physical agents by which they are attacked.

The fibrils in the cell-processes are much more resistant—in fact, they may remain almost intact when those of the cell-body are practically destroyed. Degeneration of the fibrils of the cell-processes spreads from the cell outwards.

The signs of alteration of the nucleus consist in altered staining reaction, atrophy, change of form, displacement and disintegration. The spongioplasm shows no alterations for a long time. When the fibrils of the cell have disappeared it sometimes undergoes a slow "necrotic disintegration," *i.e.* it becomes granular and is removed ; on the other hand, an acute "coagulation necrosis" occurs pretty frequently ; vacuolisation of the cell is common.

The alterations seen in the nerves fibres in progressive paralysis are parenchymatous ; simple atrophy and interstitial neuritis are rare ; segmental periaxial degeneration is more common. All these changes are more marked in the peripheral portions of the nerves, and they certainly precede the alterations in the nerve cells. The axiscylinder is the first part of the fibre to show any alterations. These begin with a swelling of the axiscylinder, and go on to separation of the fibrils, varicosity and disintegration. Changes appear in the myeline sheath soon after the axiscylinder becomes affected. The elements of the nervous system which are most attacked are those of highest function ; relatively the changes are least grave in the intervertebral ganglia and are most frequent and serious in the frontal lobes.

The author has found the terminal masses, described by Cajal, in the intervertebral ganglia, in the spinal cord, and in the cerebellum; none have been seen in the cerebrum. He expresses some doubt as to whether they are such important structures as Cajal and Nageotte have suggested, and inclines to the view that some of them represent forms of degeneration of the fibres.

All these changes are probably the result of a grave toxæmia.

R. G. Rows.

(206) A SPINAL COLUMN IN SPONDYLOSE RHIZOMELIQUE. SPINAL ANKYLOSING RHEUMATISM AND TABES. (Étude d'une colonne vertébrale de spondylose rhizomélique. II. Rheumatisme ankylosant vertébrale et tabes.)

ODDO, *Nouv. Icon. de la Salpêtrière*, No. 4, 1908, p. 278.

Recent work has given us a new chapter in pathology, that of medical affections of the spine. In spite, however, of the distinct types which have been described by Pierre Marie and Léri, certain points are still obscure.

The writer gives an account of a case of spondylose rhizomelique which absolutely conforms to the type described by Marie and Léri. The lesion affected the whole spinal column, and was characterised:

(*a*) By the regular and geometrical curve of the spinal column, formed by a dorso-lumbar cyphosis, a short cervical lordosis and a slight scoliosis.

(*b*) By a subsiding of the vertebral bodies, which causes the preceding curves.

(*c*) By a vertebral ankylosis resulting from a fibrous ossification of all the spinal ligaments, with the exception of the anterior and posterior spinal ligaments.

(*d*) By rarification of the old bone tissue, contrasting with the condensation of new-formed tissue.

(*e*) By a complete absence of osteophytes and of bony growth.

This type differs clearly from (1) ankylosing spinal rheumatism, which is rectilinear, effacing the normal curves instead of accentuating them; and from (2) the heredo-traumatic kyphosis of Bechterew, in which the lesions, localised to one region, appear to be the result of rupture of the ligaments resulting from the injury. The main lesion is the ossification of the common anterior spinal ligament, in the concavity of the curvature.

The writer's case confirms the pathological anatomy of spondylose rhizomelique as given by Marie and Léri. Disease is a peculiar ossification, localised to the ligaments, the cotyloid ligaments, and the menisci. In the author's case the ligaments are ossified, petrified one might say, so as to cause fusion of the apophyses and the plates which they join. This work of ossification takes place in each variety of ligament.

Ossification proceeds fibre by fibre, and is regular, smooth, or slightly rough, without any marked exostosis or hyperostosis. An experienced eye can distinguish the lesions at the first glance.

Absence of exuberance in the process of ossification avoids any compression either at the level of the intervertebral foramina or on the cord itself. The process of ossification is secondary to osseous rarification. This is manifest in the case in question. There is great fragility of the column, so much so that it was impossible to avoid breaking it in handling. The ossification is a process of compensation (Léri), a mechanism of defence to limit the bending of the column. It begins in the ligaments at the level of the *convexity* of the curvatures before there is any trace at the *concavity*. The orientation of the ankylosing process can be modified by the attitude of patient. One patient has his head fixed in an attitude which allows him to look at work on his knees; another has it drawn up so that he can look before him. In treatment, one should try to give patient the attitude most useful to him.

II. *Ankylosing Spinal Rheumatism and Tabes.* — Various opinions are held as to the participation of the cord in the ankylosing process. Marie and Léri think absence of any sign of compression is the essential character of spondylose rhizomelique; the only nervous symptoms here are pain and muscular atrophy. Bechterew describes in heredo-traumatic kyphosis as medullary symptoms (1) a paretic condition of the muscles of the trunk, neck, limbs, often with slight atrophy of peri-scapular muscles; (2) dulling of sensibility, mainly in region innervated by dorsal and lower cervical roots, sometimes also by lumbar roots; (3) signs of irritation of spinal nerves, paræsthesia, etc.

Presence of marked symptoms of spinal irritation distinguishes the syndrome of Bechterew from that of Marie-Strümpell; but Bechterew found in one case degeneration of posterior columns, disseminated lesions of antero-lateral columns, etc.; and an involvement of the meninges in spondylose rhizomelique has been noted by Donetti and others. Syringomyelic phenomena have also been observed (Achard, etc.).

In 1903 Babinski gave to the Society of Neurology, under title of spondylosing pseudo-tabes, three cases with lightning pains and absence of knee-jerks, presence of Achilles jerks, and no other sign of tabes. These were cases of lesion of the posterior roots, produced by spinal inflammation at the level of the intravertebral foramina.

Nervous troubles are frequent in ankylosing rheumatism, because of the osteophytic productions which distinguish this form.

Oddo describes in detail a curious case in which diagnosis between spondylose rhizomelique and ankylosing rheumatism is difficult. Along with vertebral ankylosis there were signs of tabes, marked sensory troubles, motor inco-ordination, myosis, sphincter troubles, absence of reflexes—not pseudo-tabes, but real tabes.

As to the connections between this tabes and the vertebral lesion, the patient contracted syphilis after onset of the spinal troubles. Case is not one of syphilitic spondylose, but the syphilis was the origin of his tabes. It is difficult to be sure that the spinal lesion had absolutely nothing to do with production of tabes.

Vertebral rheumatism, much more than spondylose rhizomelique, has, on account of its osteophytic character, a marked action on the roots, especially the posterior roots, and this action may determine the tabetic process if it is exercised on a syphilitic cord.

The author thinks that vertebral ankylosis, either spondylitic or rheumatismal, may have a discrete and limited action on the roots and posterior columns. It then causes the spondylitic pseudo-tabes of Babinski. If syphilis intervenes, this action may become more extensive, and it then furnishes the impetus to the syphilis which makes it productive of true tabes.

ALEXANDER BRUCE.

CLINICAL NEUROLOGY.

A CLINICAL STUDY OF FIFTY CASES OF MUSCULAR (207) DYSTROPHY. JOSEPH COLLINS and H. CLIMENKO. Post-Graduate Twenty-fifth Anniversary Vol., New York, 1908.

THESE authors "have taken from their records the histories of 50 successive cases of dystrophy and subjected them to analysis," particularly to learn how they group themselves, *first*, in reference to age; *secondly*, as to the part of the body first affected; *thirdly*, according to the most permanent objective features.

Of these 50 cases the onset of the disease occurred below the age of ten years in 46, whilst in 2 it began at thirteen, in 1 at seventeen years, and in 1 at thirty-two years of age. In the series there are 40 males and 10 females. In 24 the onset was preceded by some exanthem, scarlet fever predominating.

So far the analysis conducts us, but it is to be regretted that the authors afford no information as to the second and third points which they mention.

The authors rightly point out that there is no dividing line between the various types of muscular dystrophy which have been described, but they are willing to accept a classification of the dystrophies provided that it is done merely to facilitate the recognition of the disease clinically, and that such classification is in no way an attempt to separate one form of the disease from another.

They also point out that the form of dystrophy known under the names of Charcot, Marie and Tooth should be assigned to its right class, since it has been shown that that condition is due to definite changes in the nervous system.

The paper gives an interesting digest of the history of the muscular dystrophy, and of the pathological anatomy.

The authors conclude their paper by a report of illustrative cases: these include the " distal type," " the hypertrophic type," " the facio-scapulo-humeral type," " the atrophic type," and " the juvenile type." These cases are in themselves of interest, but, in spite of the authors' contention that the description of several types of dystrophy has caused a great confusion of the subject, they have themselves used unusual " types " under which to classify their cases.

The intention to give some good classification of the muscular dystrophies based on an examination of a series of cases is excellent, but it can hardly be said to be accomplished in this paper.

F. E. BATTEN.

THE PROGNOSIS AND TREATMENT OF OTOGENIC FACIAL (208) PARALYSIS. (Die Prognose und Behandlung der otogenen Facialislähmung.) ALT, *Zentralbl. f. Ohrenheilk.*, 1909, Bd. 7, S. 169.

FACIAL paralysis as a result of acute middle-ear catarrh is of short duration and requires no treatment. It is a very rare condition. It is much more common in otitis media acuta. Here also the paraylsis usually passes off rapidly when the inflammation subsides. The paralysis occurring in chronic otitis media is of far greater importance; it is due to penetration of the pus into the Fallopian canal, or to compression of the nerve by cholesteatoma or necrosed bone, or hyperostosis or granulation tissue. The radical mastoid operation will usually effect a cure, especially if the paralysis is of short duration, but some weeks or months may pass before there is complete restitution of function.

Post-operative facial paralysis is also a condition of great practical interest, and may be due to the removal of granulation in which the nerve has become imbedded, or it may be due to the nerve taking an unusual course. If paresis is seen on the patient's recovery from the narcosis, the nerve need not necessarily have been injured, but may have been exposed so that the packing exerts pressure on the nerve, thus causing the paralysis. Paresis may develop some days after the operation. Facial paralysis is also occasionally produced by tumours, especially carcinoma of the middle ear and fibrosarcoma.

In the conservative treatment of facial paralysis, electricity plays the most important part. In galvanisation the cathode is placed over the nerve. Massage is also useful. The majority of cases result in cure. In a smaller number the cure is partial. Fuchs in 593 cases of peripheral facial paralysis observed 74 cases which did not get right; in 24 of these contracture had appeared. If conservative methods fail, operation may be resorted to. The facial nerve is divided close to the stylomastoid foramen, and is implanted into the hypoglossal nerve, the latter being half divided. The results of the operation are good. In pre-operative cases Alt, in performing the radical mastoid operation, obtains an absolute bloodless field by employing adrenalin, opens the Fallopian canal, and frees the nerve from any substance pressing on it. The disappearance of the paralysis is usually rapid. He uses the same technique in post-operative cases of paralysis.' W. G. PORTER.

PRIMARY SYPHILITIC POLYNEURITIS IN THE TERTIARY (209) PERIOD. (Della polynevrite sifilitica primitiva in periodo terziario.) C. FRUGONI, *Riforma Medica*, 1909, p. 6.

NEURITIS in syphilis is usually secondary to gummata, osteoperiostitic processes or to plaques of hyperplastic or sclerogummatous basilar or spinal meningitis. In primary syphilitic neuritis the process is usually limited to a single nerve, and most frequently occurs at an early period of the disease. Primary multiple neuritis in the tertiary period is quite exceptional. Only seven or eight cases have been recorded. Some syphilologists such as Barthélemy doubt its existence. Leyden, Raymond, and others have stated that some cases of mercurial neuritis may possibly have been mistaken for syphilitic neuritis. A groom, aged 32, three years after syphilitic infection began to suffer from weakness in all four extremities. The paresis was most marked in the left arm. The nerves of the left brachial plexus, as well as the median, ulnar, and sciatic, were painful but not enlarged. The left deltoid, which was markedly atrophied, showed the reaction of degeneration. The knee and ankle jerks were lost. There were no sensory changes. Rapid recovery took place under treatment with mercury and iodide of potassium. J. D. ROLLESTON.

TABES AND PREGNANCY. UNCONTROLLABLE VOMITING (210) DUE TO GASTRIC CRISES. (Tabes et grossesse. Vomissements incoercibles par crises gastriques.) H. DUFOUR and COTTENOT, *Rev. Neurol.*, 1908, p. 1345 (Soc. de Neurol.), and *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, 1909, p. 211.

DUFOUR and Cottenot record two cases where uncontrollable vomiting in pregnancy was found to be due to latent tabes. The first case was a woman, aged 35, admitted to hospital in the fourth month of pregnancy. Her two previous children had died shortly after birth. The second case, a woman aged 29, whose first pregnancy had ended by an abortion at the sixth month four years previously, was admitted to hospital in the third month of pregnancy. A year previously she had been operated on for violent vomiting, which had been attributed to intestinal obstruction, though it is more probable that the condition was due to a gastric crisis. An artificial anus was made which was subsequently closed. Mercurial injections were adopted in both cases, and the writers hoped that a living child might be born in each case, as in that recently reported by them (*v. Rev. of Neurol.*, 1908, p. 553). J. D. ROLLESTON.

FAMILIAL AND JUVENILE TABES WITH INFANTILISM (211) AFTER ACQUIRED SYPHILIS. (Ueber familiäre und juvenile Tabes mit Infantilismus nach Lues acquisita.) G. STIEFLER, *Wien. klin. Woch.*, 1909, No. 5, p. 163.

MOST cases of juvenile tabes have followed congenital syphilis. Comparatively few have been recorded after the acquired disease. A woman infected her husband and child and seven members of another family with syphilis. Of the second family, the father, a daughter, and a son developed tabes. The father was infected at thirty-seven, and showed the first symptoms of tabes ten years later. The daughter was infected when eighteen months old, and showed visual changes at eight and lightning pains at eleven. At fourteen and a half she resembled a child of eight or nine. The son was infected at five, and developed paræsthesia and lightning pains ten years later, followed by bladder troubles in another two years, and finally by impairment of vision. At the age of eighteen and a half he looked like a boy of thirteen. The axillary and pubic hair was absent and the penis and testes small. The disease progressed rapidly and ended fatally. Stiefler states that three views have been held as to the relationship of tabes to infantilism :—1. Infantilism is a sequela of tabes; 2. Tabes and infantilism are co-ordinated phenomena, being both the sequelæ of syphilis; 3. Infantilism is a predisposing cause of tabes. J. D. ROLLESTON.

CHRONIC SPINAL MENINGITIS. A Clinical Lecture. Sir VICTOR
(212) HORSLEY, *Brit. Med. Journ.*, Feb. 27, 1909, p. 513.

SIR VICTOR HORSLEY here describes the condition known as circumscribed spinal meningitis, to which attention was first prominently drawn by Krause and Oppenheim in 1907. At the time this lecture was delivered (November 1907) the author was able to find records of twenty-one cases upon which he had personally operated. The symptoms produced closely resemble those of tumour, except in certain minutiæ. An adult person (in only one of Horsley's cases was the patient below the age of puberty) begins to complain of pain and progressive loss of power in the legs, with, it may be, also slight kyphotic curvature of the spine, and develops ultimately a progressive paraplegia that runs through the ordinary course and terminates fatally. The first case of the kind met with by the author was sent to him by Sir William Gowers ten years ago with the diagnosis of probable caries and secondary paraplegia. Upon operation the neural canal was found to be narrowed by an enormous distention of the theca of the cord. There was a considerable excess of cerebro-spinal fluid, and the cord was rather shrunken. The patient recovered, and is now engaged in business from which he had had previously to retire. Horsley has performed laminectomy and sub-dural mercurial irrigation in a relatively large number of such cases. As the first twenty operations were not followed by a single death, no minute anatomical examination was forthcoming. In one case, however, the patient died suddenly from syphilitic myocarditis six weeks after the wound had healed. In another case, in which there was no operation, the patient succumbed to the paraplegia. The spinal cord, which had often been noticed at operation to be shrunken, was markedly contracted in these two cases, and presented "typical glial sclerosis." In one case the meningitis is considered to be probably referable to influenza, and Horsley in this connection refers to several cases of meningitis published by Horatio Wood, of Philadelphia, in 1890-1. A point he considers of some importance in distinction from tumour is that diffuse areas are affected by pain, whereas in the latter instance pain is usually referred to one nerve root. All the cases present a certain degree of unilaterality. Pain is felt in one limb first, then spreads to the other limb and up the back. It may be as severe as in cases of tumour. None of the cases he has seen have had absolute anæsthesia. The anæsthesia is often slight though extensive, all forms of sensation being affected. Gradual weakness develops, there being no tendency to root distribution of the paralysis. No vasomotor phenomena are observed. Horsley uses one in a thousand sublimate solution with which to irrigate the subdural space. In the large majority of his twenty operations the laminectomy was performed between the 4th and 9th dorsal, this being the uppermost level of the symptoms. When the distended theca is exposed and opened it collapses, and in all cases the cord has presented a shrunken appearance. In one of the cases already referred to, in which death occurred, the cord was markedly flattened, there being a definite sclero-gliosis all round the periphery—all the columns being universally affected, except in the cervical region. Some of the cases, Horsley believes, are certainly syphilitic and yet, as sometimes happens in syphilis of the nervous system, resist all treatment not directly applied by surgical intervention. Trauma would appear to be an unlikely factor, for very few of these patients have complained of injury, and, as Oppenheim states, the condition is not a sequel of concussion or railway spine. Horsley believes that a certain number of these cases are gonorrhœal, since infection occurred in several instances a short time before the appearance of the spinal symptoms. Analogy between laminectomy for this condition and laparotomy for the cure of tuberculous peritonitis is suggested. The skin-wound, in the author's opinion, should be completely closed, and not drained. He no longer, however, considers it necessary to sew up the theca. The paper terminates with a paragraph in which Horsley states "that probably many cases of so-called acute myelitis are really meningeal in origin, and that a laminectomy and free drainage of the subdural space might arrest the whole process and the subsequent fatal injury which the cord sustains in such conditions."

Edwin Bramwell.

CIRCUMSCRIBED SEROUS SPINAL MENINGITIS. W. G.
(213) Spiller, *Amer. Journ. Med. Sc.*, Jan. 1909.

The condition described in this article consists of a collection of clear fluid in a cyst of the spinal pia arachnoid. The symptoms are those of circumscribed compression of the spinal cord, and the condition cannot be distinguished clinically from tumour of the cord. The writer records a case in which recovery has persisted, after operation, for a period of six years and five months. He thinks that certain cases may be more amenable to surgical intervention than are many tumours. D. K. Henderson.

THE PROGRESS OF RECOVERY AFTER OPERATIVE TREATMENT OF TUMOURS OF THE SPINAL MENINGES.

(214) **(Der Heilungs verlauf nach operativer Behandlung der Rückenmarkshautgeschwülst.)** H. OPPENHEIM, *Neurol. Centralbl.*, March 16, 1909, p. 290.

PROFESSOR OPPENHEIM's personal experience of tumours of the spinal meninges for which operation has been performed is probably greater than that of any other physician. This paper is based entirely upon cases seen by him and operated on by Sonnenburg, Borchardt and F. Krause.

Progress in recovery depends upon a variety of factors, among which may be mentioned the level of the growth, its nature and extent, its relations to the transverse section, the condition of the compressed spinal cord, the comparative difficulty of the operation, and the manipulation necessary for the removal of the tumour. Again, cystitis or bed-sores may delay recovery.

Ill effects may be produced as a direct consequence of the operation. Oppenheim, for instance, has met with a case in which total atonic paraplegia with areflexia resulted from direct injury to the cord by an instrument during the operation. It is sometimes impossible to avoid injury to the cord during the process of extraction of the tumour. In one such case, operated on by Borchardt, a flaccid paraplegia so produced was eventually almost completely recovered from.

Cases in which an atonic paraplegia succeeds a hypertonic state as a consequence of growth of the tumour and gradually increasing pressure upon the cord are by no means unfavourable for operation. When there is merely a diminution of the hypertonic state, the reflexes still persisting, the probabilities of complete recovery are even greater.

The order in which the various functions of the spinal cord return when a new growth has been removed vary according to the situation, size, and nature of the tumour and the condition of the compressed spinal cord. As a rule, pain disappears at once. Within a day or two the patient can often pass water voluntarily. Within a few days of operation some return of power may at times be observed in muscles which were previously completely paralysed, voluntary movement usually improving first in the contralateral leg. Persistent paralytic defects are especially apt to remain in muscles the nerve roots or nuclei of which are directly involved by the tumour. Sensation usually begins to improve before voluntary power, and usually proceeds more rapidly.

The improvement is not always a uniform process, for, in a considerable proportion of cases, towards the end of the first or during the second or third weeks relapse may occur. The catheter may again be required. Pains may appear in arms, legs, abdomen, bladder, and trunk. Headache, vomiting, meteorism, elevation of temperature and increased frequency of the pulse, nystagmus and inequality of the pupils may suggest a meningitis. The cerebro-spinal fluid, however, is found to be quite clear, and these symptoms, which are probably due to an increased secretion of cerebro-spinal fluid, and may last for a few days or even for weeks, ultimately disappear. Cystitis and bed-sores sometimes develop.

During the course of recovery new symptoms may actually develop, *e.g.* ataxia. Thus it sometimes happens that a tumour pressing on the posterior surface of the spinal cord produces the symptomatology of a combined system disease. As pressure increases the paralysis predominates, while when the tumour is removed the paraplegia recovers, leaving the ataxia.

The time which elapses before recovery is complete varies according to a number of circumstances. Speaking generally, it may be said that a few months after operation the improvement is pronounced and the patient is again able to walk. In one of Oppenheim's cases the patient had completely recovered two months after the operation. As a rule, however, complete recovery is not observed under six months, and it may be even longer.

EDWIN BRAMWELL.

AN EPIDEMIC OF ACUTE ANTERIOR POLIOMYELITIS.

(215) R. MINOR WILEY and J. C. DARDEM, *Journ. Amer. Med. Assoc.*, Vol. lii., No. 8.

TWENTY-FIVE cases are briefly reported which occurred in Salem, Virginia, and the adjacent country, between June 2 and August 10, 1908. For some time previous to this outbreak the weather had been intensely hot, while the prevailing humidity was high. An analysis of the cases showed the following points of interest:—The disease was confined to children under five years of age, except in one case, a boy of six. There were seven cases in which one leg was involved, one case in which one arm only was affected, five cases in which one arm and one leg were paralysed, one case in which one arm and the leg on the opposite side were affected, six cases in which both legs were involved, four cases in which all the limbs were paralysed, five cases showed bulbar paralysis, and three deaths occurred. In all the fatal cases there was respiratory and cardiac paralysis. The fact that not more than one case occurred in any house, although in many instances there were other children in the family who associated with the affected child, would seem to prove that the disease is not contagious. D. K. HENDERSON.

POLIOMYELITIS ANTERIOR ACUTA, WITH EXHIBITION OF (216) CASE. LA SALLE ARCHAMBAULT. Remarks on the Surgical Treatment. W. G. MACDONALD, *Albany Med. Ann.*, Dec. 1908.

THE chief point of interest in this case, which occurred in a girl of 18 months, lies in the minimal extent of disability. There was some feverishness, then the right arm was temporarily paralysed. When seen by the author, eight years later, there was merely an atrophic paralysis of the deltoid with some paresis of the biceps. As a result there was a subluxation of the shoulder joint. The surgical treatment proposed is to turn down a portion from the trapezius in the neck, and another portion from the pectoralis major outward from the chest. J. H. HARVEY PIRIE.

HEINE-MEDIN'S DISEASE. (Ueber Heine-medinsche Krankheit.) (217) ED. SCHWARZ, *St Petersb. med. Wchnschft.*, 10 (23) Jan. 1909, p. 21.

IN addition to describing a case of poliomyelitis acuta in a man of 50, the author gives in this paper an interesting account of a small school-epidemic in a district of some 500 inhabitants. In all 49 persons of various ages were affected, 23 of them being abortive cases with no residual paralysis; of the other 26 some showed the typical picture of poliomyelitis, others that of Landry's paralysis, yet others of acute bulbar paralysis. A few were isolated cases; most two, three, or four in one house, often of different types. It is interesting that although the infection apparently came from the school, in no fewer than five families, not the child attending school, but other members were affected, looking as if infection could be carried by a third (healthy) party. Owing to the evident common origin of these varying types of disease, the author accepts the suggestion of Wickman to name the group Heine-Medin's disease.

J. H. HARVEY PIRIE.

THE SEQUELÆ OF INFANTILE PARALYSIS. (Reliquats de (218) Paralysie infantile.) RAYMOND, *Journ. des Prat.*, Jan. 9, 1909, p. 23.

THIS article discusses the case of a boy, aged 17, suffering from the results of a poliomyelitis at the age of four. The chief symptom present was pain in the lower limbs, which was aggravated by fatigue, due either to walking or prolonged standing, but was abolished by rest. The case also showed some of the sequelæ so commonly met with in this disease, such as scoliosis and paralysis of certain groups of muscles. Professor Raymond points out that restricted exercise and general tonic treatment, associated, if necessary, with orthopedic apparatus, frequently give excellent results, but emphasises the fact that an acute poliomyelitis which has passed into the chronic state may again relapse. If, as in this case, the patient presents fibrillary tremors, the suspicion should always be awakened as to the possible development of a myelopathic muscular atrophy, for this complication has been noticed several times. C. T. HAND NEWTON.

MENINGITIS IN CHILDREN, WITH ESPECIAL REFERENCE TO (219) THE AID AFFORDED BY LUMBAR PUNCTURE.

N. P. MARSH and O. T. WILLIAMS, *Liverpool Med.-Chir. Journ.*, Jan. 1909.

Drs N. P. Marsh and O. T. Williams read a paper on meningitis in children, with especial reference to the aid afforded by lumbar puncture in diagnosis, prognosis, and treatment. They emphasised the point that lumbar puncture was the only certain means of definitely diagnosing meningitis from other conditions, particularly meningismus. Illustrative cases of periodic vomiting and uræmia with meningismus were described, with the findings in the cerebro-spinal fluid. Eight cases of tuberculous meningitis with the cytology of the cerebro-spinal fluid were discussed, and two cases, closely simulating this condition, which ended in recovery, with the same cytological and chemical findings in the fluid, were commented upon. Tubercle bacilli in the coagulum, obtained from cases of tuberculous meningitis, were demonstrated. Of ten cases of meningococcic meningitis, two were cerebro-spinal and eight posterior-basal. These were all treated by repeated lumbar puncture, and five recovered, four died, and one was discharged with measles. One case of cerebro-spinal meningitis which recovered was treated with a vaccine made from his own organisms.

In the last group there were five cases of purulent meningitis. They were all pneumococcic, and all died.

Lastly, they deduced conclusions as to the extreme value of lumbar puncture from a diagnostic point, mentioned its value in some of the cases in reducing cranial pressure, drawing especial attention to the fact that in the five meningococcic cases which recovered there was not a single instance of chronic hydrocephalus or mental disability, and finally they demonstrated the importance of the procedure in order to obtain cultures for vaccine therapy.

AUTHOR'S ABSTRACT.

INFLUENZAL MENINGITIS. BENSON A. COHOE, *Amer. Journ.* (220) *Med. Sc.*, Jan. 1909.

THE case is reported of a man, aged 33 years, who, two weeks previous to admission to hospital, received a blow from a bottle behind the left ear, following which he remained in bed, complaining only of dizziness and cold in the head. On examination the neck was found to be held stiffly with some retraction; Kernig's sign was present on both sides, both eyes were kept closed, and the right eye showed a slight external strabismus; the pupils were small, equal, reacted actively to light and on accommodation; the knee jerks were active and plantar response was flexion. The aural examination gave evidence of chronic middle-ear catarrh of both ears. The ophthalmoscopic examination showed both discs to be hyperæmic, œdematous, swollen; in the upper part of the right disc the remains of a small hæmorrhage were seen. Lumbar puncture was performed, and on each occasion a turbid fluid was obtained under high pressure. The temperature closely resembled that of typhoid fever, and the pulse rate was slow during the entire course of the disease, at times being only 50 per minute. On pigeon-blood agar a luxuriant growth of dew-drop colonies was obtained, while sub-cultures on hæmoglobin-free media yielded no growth. The growth showed a short thick bacillus non-motile and Gram-negative, which conformed in every respect with the bacillus of Pfeiffer. It could not be shown that the serum possessed specific agglutinins, and animal inoculation was without result.

The case was of interest in that it occurred in an adult and terminated in recovery. The literature of the whole subject is fully reviewed. D. K. HENDERSON.

A CASE OF UNSUSPECTED NECROSIS OF THE PETROUS BONE. (221) **MENINGITIS. DEATH.** HILL HASTINGS, *Arch. Otol.*, Dec. 1908.

THIS case is stated to have been of only four months' duration, but there was a history of otorrhœa twenty-four years before, and the patient had never heard well in the right ear since then. Hearing was negative to the watch and doubtful for conversation on the right side, and the patient had suffered from vomiting one week before admission. Ophthalmoscopic examination showed injection of the right disc. The operation for acute mastoiditis showed perforation of the inner aspect of the mastoid (Bezold's mastoiditis) and perisinus abscess. The cases did well for three weeks, but then suffered from restlessness and delirium, and *a marked nystagmus was* *seen when patient was directed to look away from the affected side,* lateral in character with slight rotatory motion. *When the eyes were directed towards the affected side no nystagmus was seen.* The patient subsequently developed meningitis, and died in spite of exploration of the temporo-sphenoidal lobe, cerebellum and lateral sinus of the right side. The autopsy revealed purulent meningitis but no brain abscess or sinus thrombosis; there was, however, an abscess cavity under the dura at the tip of the right petrous pyramid underneath the Gasserian ganglion. Unfortunately only a macroscopic examination of the labyrinth was carried out; but "it was believed that the cochlea was full of pus," and the tympanic cavity also contained pus. The case is interesting because the real significance of the nystagmus observed by the writer was apparently unknown to him: a radical mastoid operation combined with free drainage of the labyrinth might have given a different result.

J. S. Fraser.

CEREBRAL AND CEREBRO-SPINAL MENINGITIS IN THE (222) **PUERPERIUM. (Des méningites cérébrales et cérébro-spinales au cours de la puerpéralité.)** E. Lafont, *Thèses de Paris,* 1908-1909, No. 72.

This thesis contains a review of seventeen cases, one of which has hitherto been unpublished. The pathology and pathological anatomy are the same as in meningitis occurring apart from the puerperium. The micro-organism most frequently found is the pneumococcus, usually in pure culture, but sometimes associated with the micrococcus tetragenus and strepto- or staphylococci. The condition has been mistaken most frequently for eclampsia, meningeal hæmorrhage, tuberculous meningitis, acute mania and typhoid fever. In some cases the diagnosis was rectified before death, in others the truth was not revealed till the autopsy. Errors are due to the fact that the clinical course is often atypical. The syndrome may be incomplete, or one or more symptoms may predominate. The disease is rapidly fatal for the mother. The child usually escapes. Lumbar puncture is recommended both as a diagnostic and as a therapeutical measure.

J. D. Rolleston.

PURULENT ENCEPHALITIS. A Clinical Lecture by C. Ernest (223) West, *Lancet,* Feb. 20, 1909, p. 523.

The case is that of a male aged 17, who for five days had suffered from intense headache, which, although general, was worse on the left side of the head. Drowsiness for four days with several rigors.

No history of vomiting or vertigo. Bilateral otorrhœa for two years. Frequent headaches for five or six weeks. Looked acutely ill. Answered questions slowly, but correctly. Both membranæ tympani almost entirely destroyed with granulations on either side. No redness or œdema of either mastoid, but tenderness on firm pressure over left mastoid with a subjective sensation of yielding of the bone under pressure. Slight congestion of both optic discs. No ocular palsies, nystagmus, facial paralysis, head retraction, or stiffness of neck muscles. Some chronic enlargement of lymphatic glands along upper part of both internal jugulars. Temperature 100, pulse 85, regular and of good volume. Respirations 24, very shallow. Leucocytes 21,000 per cubic mm.

Suppuration in the left temporo-sphenoidal lobe diagnosed. Grounds for this diagnosis discussed at length. Radical mastoid operation performed and an extra-dural abscess exposed in the middle fossa. A small amount of offensive pus issued along the director passed into temporo-sphenoidal lobe. Dura mater incised and drainage tube inserted. Four days after operation temperature rose to 104·6, the pulse being 80. The patient complained of intense headache and became very drowsy. The entire squama removed and a large window cut in dura. Considerable extent of cortex removed and stinking brain substance scooped away until a cavity was left the size of the larger half of a hen's egg. Recovery was rapid and without any serious incidents.

EDWIN BRAMWELL.

THE DURATION OF LIFE AFTER EXTENSIVE HÆMORRHAGE (224) OF THE BRAIN. WILLIAM G. SPILLER, *Journ. Amer. Med. Assoc.*, Dec. 19, 1908.

A DIAGNOSIS of apoplexy is sometimes made when death has occurred within fifteen or thirty minutes after the beginning of an attack. The author has examined the records of thirteen cases in which a necropsy was obtained, and extensive hæmorrhage of the brain was found. In all instances life had been prolonged at least hours after the onset of the apoplexy, even when the hæmorrhage was very extensive, had broken into the ventricles, and filled all the ventricles, even the fourth. In two cases of this kind life was prolonged several hours—in one about five hours, in the other eighteen to twenty hours.

As a rule extensive rupture into the lateral ventricles is followed by more rapid death than when the ventricles escape, but a moderate hæmorrhagic exudate into the ventricles is not necessarily rapidly fatal. In nine cases the lateral ventricles were implicated; in one of these death occurred after three days, in another after eleven days, in another after at least five days, in another after at least twenty-four hours, in another after five or six days, in another after about five days, in another after about a day and a half, in another after sixteen days, and in another after about two days.

One case was remarkable in that the hæmorrhage was very extensive in the left cerebral hemisphere, and extended into both lateral ventricles, and yet the patient lived sixteen days. In one case life persisted almost two months, although the hæmorrhage was of large size.

It seems to be held by some that life must be terminated within a few days if the hæmorrhage has destroyed a large part of one cerebral hemisphere, but the case last mentioned shows that this is not necessarily so. The clot was found partly encapsulated, and measured 7 x 2·5 cm. It destroyed the lenticular nucleus, a large part of the posterior limb of the internal capsule, and extended to the island of Reil.

The author gives a brief clinical history of each case, with the pathological findings. AUTHOR'S ABSTRACT.

THE DISEASES OF THE CEREBRAL ARTERIES. MOLEEN (225) (Denver), *Journ. Amer. Med. Assoc.*, Feb. 27, 1909.

THE purpose of the paper is to study vascular conditions in the brain with the idea of preventing, or at least postponing, attacks of hemiplegia. The fundamental cause of hæmorrhage and thrombosis seems to be arterio-sclerosis. Toxic conditions such as syphilis are responsible for the development of many such cases. High blood-pressure and arterio-sclerosis usually exist together, their relationship has not yet been determined. The tendency toward sclerotic arteries is often inherited.

Varieties.—Diffuse and nodular. The cerebral arteries are affected about equally by each form; both may co-exist in the same vessel. In the nodular form multiple aneurisms often develop. In the diffuse form incomplete occlusion is the most common sequel.

Symptoms.—Headache is the most common and constant. Dizziness, unsteady gait and station, occasional emotional disturbances, finally the symptoms of the " stroke " itself.

Diagnosis.—Early diagnosis is most important; increased blood pressure, increase in the force and length of the first cardiac sound, accentuation of the second, increase of the ascending slope and delay in the decline of the tidal wave are among the earliest symptoms. Transitory attacks of paresis are probably due to acute dilatation of the vessels, coma to sudden interference with cerebral circulation.

Treatment.—Rest, restricted diet, iodine to increase katabolism, thiosinamin for the power it possesses in softening cicatricial tissue, thyroid extract to control high tension, nitro-glycerine or sodium-nitrite for sudden weakness. It is most important that treatment be instituted early. C. H. HOLMES.

CEREBRAL THROMBOSIS AS A RARE COMPLICATION OF (226) WHOOPING-COUGH. (A proposito di una complicazione non frequente della pertosse.) O. FEDERICI, *Riv. di clin. pediat.*, 1908, p. 914.

A GIRL, aged 2¾ years, who had been suffering from whooping-cough for three weeks, was admitted to hospital with rigidity of the limbs and frequent lateral movements of the head. There was intense dermatographia and generalised bronchitis. The paroxysms of coughing were severe. The cerebro-spinal fluid was normal, and bacteriological examination of the blood was negative. Death, preceded by coma and convulsive movements of the right half of the body, took place three days after admission. At the autopsy the large and medium-sized cerebral arteries and veins were found to be normal, but the intima and to a less extent the media and adventitia of the small arteries and veins were swollen, and in a few places showed a small-celled infiltration. Similar lesions were found in the sinuses. J. D. ROLLESTON.

TWO CASES OF SINUS THROMBOSIS, WITH ATYPICAL (227) SYMPTOMS. OPERATIVE AND PATHOLOGICAL FINDINGS. S. J. KOPETZKY, *Arch. Otol.*, Dec. 1908.

IN both of these cases the typical swinging temperature and rigors were absent: the first patient, aged 43, had suffered from otorrhœa for eighteen months and from marked œdema of the right mastoid, temporal, parietal and malar regions for two days: at the operation no pus was found under the temporal fascia, and this fact, combined with the œdema, led the writer to diagnose sinus thrombosis in spite of the absence of the usual symptoms. After an extensive exposure and opening of the lateral sinus, combined with ligature of the internal jugular, the case did well. In the second case the symptoms and appearances pointed to disease of the right ear—in fact, the left ear is described as normal; in spite of the radical mastoid operation the pulse rate increased and the patient suffered from vomiting and pain in the right ear and an attack of "delirium." A second operation failed to show any disease of the meninges or of the sinus wall, and was followed by the death of the patient. At the autopsy the brain, meninges, sinus, and labyrinth on the right side were normal, but the left middle ear was found to be filled with pus, and there was an extensive thrombosis of the left sinus, which was unusually superficial and far forward. In the subsequent discussion several otologists gave it as their opinion that death had been due to the concussion, caused by the use of the hammer and gouge during the second operation, giving rise to dissemination of the clot in the left lateral sinus. J. S. FRASER.

OTITIC ABSCESS OR ENCEPHALITIS. (Otitischer Abscess oder (228) Encephalitis.) VIERHUFF, *St Petersb. med. Wchnschr.*, Bd. 34, No. 1, S. 13.

THE patient, æt. 28, was admitted to hospital supposed to be suffering from brain abscess. There was a history of left-sided otorrhœa of six years' standing. The day before admission he lost consciousness. On admission the reflexes were absent. Pulse 64, temperature subnormal. Patient is restless.

The next day the left arm and leg were constantly in motion, the right remained quiescent. Lumbar puncture showed normal cerebro-spinal fluid. Four hours later a right-sided hemiplegia had appeared. Pulse 120, temperature 38°. The following day a radical operation was performed on the ear and the brain exposed; no abscess was found. Five days later the patient died. At the sectio an encephalo-meningitis hæmorrhagica was found.

W. G. PORTER.

THE COMMON AND UNCOMMON LOCALISATION OF OTITIC (229) BRAIN ABSCESS, AS ILLUSTRATED BY TWO CASES, WITH RECOVERY. B. SACHS and A. A. BERG, *Med. Rec.*, 1909, Vol. lxxv., No. 4.

ABSCESS following otitic disease is usually found in the temporo-sphenoidal lobe or in the cerebellum.

CASE I.—Mrs F., æt. 42, left-sided otorrhœa of many years' standing. Three weeks before she was seen she had suffered from headache, nausea, and vomiting; difficulty of speech then developed; she did not answer questions or respond to orders; spontaneous speech was correct enough. There was slight optic neuritis and some weakness of the right extremities. A deep-seated temporo-sphenoidal abscess was diagnosed and found at the operation. Recovery was rapid; the aphasia disappeared within forty-eight hours.

CASE. II.—A woman, æt. 22; she had been operated on elsewhere three times, first for mastoiditis, then for lateral sinus thrombosis, and finally for suspected abscess of the temporo-sphenoidal lobe, but no abscess was found. When seen she had weakness of the right half of the face and of the right extremities, and pain in the latter. She was kept under observation. Several attacks of nausea and vomiting were noted. As the symptoms pointed to a lesion of the motor area the latter was explored and a large abscess cavity was found. Recovery was uneventful. This case is an exception to the rule that otitic abscesses are in immediate proximity to the diseased bone. W. G. PORTER.

A CONTRIBUTION TO THE PATHOLOGY AND THERAPY OF (230) OTITIC BRAIN ABSCESSES. (Beiträge zur Pathologie und Therapie der otitischen Hirnabszesse.) FERDINAND ALT, *Ztschr. f. Ohrenheilk.*, Bd. 57, H. 2-3, 1909, S. 113.

CASE I.—A female, æt. 18, showed symptoms of increased intracranial pressure, pulse 42, vomiting, somnolence, choked disc. There was a right-sided middle-ear suppuration. No nystagmus and no focal symptoms. The patient was anæsthetised with Billroth's mixture by an experienced person, but the breathing stopped, requiring artificial respiration before the operation was begun. An abscess in the cerebellum was evacuated. A quarter of an hour later breathing ceased, the heart continuing to beat, and after two and three-quarter hours' artificial respiration the patient died. At the sectio the cause of death was found to be increased intracranial pressure, the medulla being greatly compressed. The question arises whether the intracranial pressure should not be reduced in such cases by lumbar puncture. The danger of this procedure is certainly exaggerated.

CASE II.—A girl, æt. 16, was operated on for a right-sided otorrhœa of ten years' standing. Ten days later she became suddenly unconscious and had four epileptic fits; the same afternoon consciousness returned and no paresis or other symptoms remained. A few days later there was intense headache, apathy, Kernig's sign well marked, the temporo-sphenoidal lobe was explored, and a stinking abscess evacuated. Anosmia was not present. The patient recovered.

CASE III.—A girl, æt. 17, suffered from left-sided otorrhœa. She was also observed to have marked choked disc, slight right-sided facial paralysis, and to be somnolent, and she showed marked bradyphasia. Pulse 60, temperature subnormal. On lumbar puncture clear fluid escaped under high pressure. At the operation a left-sided abscess was found in the temporo-sphenoidal lobe. A second operation was performed a fortnight later, and a second abscess was opened above and behind the first. The patient died suddenly of collapse three days later, double-sided abducens paralysis having first developed. W. G. PORTER.

(231) ADEQUATE DRAINAGE THE ESSENTIAL STEP IN THE SUCCESSFUL SURGERY OF BRAIN ABSCESS.

FRED. WHITING, *Med. Rec.*, Jan. 23, 1909, p. 133.

THE author has noted the bad effects caused by the introduction of gauze into the cavities of brain abscesses after they have been opened. The consequent laceration of the brain causes a spread of the infection. To avoid this the author devised, several years ago, an encephaloscope by the aid of which the introduction and proper adjustment of gauze or other drain could be safely affected.

Complete primary evacuation of the abscess cavity is essential, and this can be easily effected by means of the encephaloscope. As a drain the author prefers gauze to tubular drains: in acute cases a minimum quantity being introduced—a single wick the size of a lead pencil—while in chronic cases the cavity should be distended with gauze. Drainage should be continued as long as the discharge continues to be purulent.

W. G. PORTER.

(232) THE CEREBRO-SPINAL FLUID IN SLEEPING SICKNESS. (Le liquide cephalo-rachidien dans le Trypanosomiase humaine (maladie du Sommeil).)

BRODEN and RODHAIN, *Névraxe*, Vol. x., F. 1, 1909.

THIS is the title of a very interesting article in which the writers record the results of over 500 lumbar punctures in cases of sleeping sickness. They claim that they have made the first serious attempt to determine the physical, chemical, and cytological characters of the fluid in health and disease, and consider these results of special value in the prognosis and treatment of sleeping sickness.

In the early stage of this disease the fluid is normal, *e.g.* it contains serum (globulin and albumin), and minute quantities of glucose. The cellular elements are represented by small lymphocytes in minute numbers. When the disease is somewhat more advanced there is a pathological " re-action " in the meninges and the character of the fluid is altered—there is a marked increase in the number of the usual small lymphocytes, and in addition there are present numerous cells, showing a nucleus, round or somewhat elongated or incurved on one side, excentrically placed. The amount of protoplasm is increased, but is not granular. These cells are held to be lymphocytes.

At a still later period appear the cellular elements held to be characteristic of trypanosomiasis. The vacuolated " mulberry-shaped " bodies of Christy are described in great detail from both fresh and stained preparations; as a result of prolonged investigation it is stated that the " dansing (*sic*) particles " of Christy are simply eosinophile myelocytes.

During the last stage of the disease, in addition to the above, cells showing large clear vacuoles and endothelial cells from the lining of the canal appear in the fluid, the chemical nature of which at the same time undergoes change, there being a marked increase in the amount of serum globulin and serum albumin.

The authors admit that for precise DIAGNOSIS examination of the cerebro-spinal fluid is not to be compared in value with examination of the blood or fluid from lymph glands, but they claim that for PROGNOSIS and TREATMENT examination of the fluid is of the utmost importance. The progress of the disease and the effects of atoxyl and other drugs may be gauged by the alterations in the character of the fluid; treatment should not be discontinued—in fact, a case cannot be considered cured until the cerebro-spinal fluid is chemically and cytologically normal.

D. G. MARSHALL.

SPONTANEOUS DISCHARGE OF CEREBRO-SPINAL FLUID (233) FROM THE EAR.

GEORGE F. COTT, *Journ. Laryngol.*, Feb. 1909.

ST CLAIR THOMSON has reported several cases in which cerebro-spinal fluid escaped from the nose, but only one in which there was a similar discharge from the ear (case of Escat of Toulouse). In the writer's first case no examination of the fluid was made, and the condition followed an operation on the nasal septum, so that the diagnosis of " otitis media serosa " made by Panzer is extremely probable. The second case is also doubtful, as it followed a modified radical operation on the left ear. Only ten drops of the fluid were collected and reported on.

J. S. FRASER.

THE GENERAL PRACTITIONER AND THE FUNCTIONAL (234) NERVOUS DISEASES.

COLLINS (New York), *Journ. Amer. Med. Assoc.*, Jan. 9, 1909.

AN earnest inquiry is made into the causes and significance of the waves of supernaturalism and Christian Science as well as to the Emanuel Movement which has been sweeping over the country. The paper is written in a breezy, satirical, somewhat sarcastic vein, dealing not too lightly with these cults, their inventors and promoters. The conclusions drawn are clear-cut and pertinent, leaving no doubt in a reader's mind that the author not only discourages any such alliances between the Clergy and Physicians, but frankly discredits the reports of results obtained by the promoters.

C. H. HOLMES.

URIC ACID AND EPILEPTIC ATTACKS). Harnsäure und epileptischer Anfall, Stoffwechseluntersuchungen bei Kombination von Diabetes mellitus und Spätepilepsie.)

(235) TINTEMANN, *Monatsschr. f. Neur. u. Psychiat.*, Dec. 1908, Bd. 24, S. 508.

IN a case of diabetes complicated by epilepsy a series of exact urinary analyses were daily undertaken for a month. The number of attacks and the amount of uric acid excreted could be correlated with each other. ERNEST JONES.

NEUROPATHIC CONDITIONS CONSECUTIVE TO THE EARTHQUAKE IN SICILY ON THE 28TH DECEMBER 1908.

(236) G. D'ABUNDO, *Riv. Ital. di Neuropat., Psych., ed Elettroter.*, Vol. ii., Fasc. 2, 1909.

CATASTROPHES such as occurred in Sicily in December last inevitably produce a violent shock on the nervous system, which manifests itself by a marked depression of the highest psychic functions and an exaggeration of the primary sentiments of fear and self-preservation, and also by serious neuropathic disturbances which in some cases produce a temporary, and in others a permanent, nervous breakdown.

In this paper the author has given a brief but interesting account of the most prominent nervous affections which he observed, not only amongst those who had been in the midst of the disturbed zone, but also in Catania and in the surrounding districts.

By far the most striking mental condition seen was the absolute apathy of those who had escaped alive from Messina, but who had lost their friends and their possessions. They recited their terrible experiences in a monotone without exhibiting any emotional signs in their physiognomy or by their gestures. This character was seen even in uncultured people, among whom the emotional signs are so easily exaggerated. It was seen to a less extent also in Catania, where work was stopped and there was a notable slowing of all activities (pre-occupation). Here, however, the altruistic sentiments were awakened as well as the instincts of fear and self-preservation. The author suggests that several factors were active to produce this result. In the first place the intellectual shock produced an inhibition of the mental faculties; in the second place the terrible fright, the indescribable sufferings and the idea of their own escape exaggerated the sentiment of self-preservation. Then the fact that the whole city was destroyed lessened the individual emotional reaction. Resignation is easier when others are also afflicted.

Another phenomenon which was observed in a very large number of people consisted in a peculiar susceptibility to the small stimuli. The nervous system seemed to be left in such a condition that the slightest vibration re-awakened the sensation of the undulatory movements felt during the earthquake. This illusion could only be overcome by watching some fixed object.

In other subjects there was an acute condition of fear that the earthquake would be repeated. This fear in many instances assumed the proportions of a real obsession, and was accompanied by a striking pallor, profuse sweating, general tremors, tachycardia, a lowered temperature, a sensation of malaise and a much diminished secretion of urine. At the same time the patients, although in such a state of anxiety, showed no desire to place themselves in a position of security.

Other psychic disturbances took the form of acute hallucinatory insanity which sometimes appeared after a brief prodromal period, and at other times seemed to begin quite suddenly with an acute hallucination accompanied by an intense agitation. These patients recovered quickly; and it is interesting to note that they remembered all the details of their psychic attack. Then in several neurasthenics the author observed that they forgot their own ailments and ceased to indulge in the usual self-analysis. Most of these returned to their former condition when the excitement was passed.

In some cases the shock formed the starting-point of a series of epileptic attacks; in many confirmed epileptics the number of attacks increased. Cases of cerebral hæmorrhage occurred in considerable numbers. Lastly, general tremors appeared in many subjects, and sometimes in several members of the same family.

R. G. Rows.

POLYGLANDULAR SYNDROME DUE TO PITUITARY OVER-ACTIVITY AND THYRO-OVARIAN INSUFFICIENCY.

(237) **(Syndrome polyglandulaire par hyperactivité hypophysaire et par insuffisance thyro-ovarienne.)** L. Rénon, A. Delille and R. Monier-Vinard, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, 1908, p. 704.

A girl, aged 16½, was admitted to hospital with the following history:—For the past four and a half years, in addition to violent headache, vomiting and ocular troubles, she had shown a great increase in height and weight. Optic atrophy was found on examination. In addition to these signs of pituitary tumour a slight thyroid insufficiency was manifested by constipation, cold feet, feelings of depression and obesity. Ovarian insufficiency was indicated by amenorrhœa, undeveloped breasts, a masculine type of pelvis, and deficiency of axillary and pubic hair. Rénon thought that the symptoms were of too old standing and too severe to receive more than a temporary amelioration from thyro-ovarian medication, and recommended radiotherapy, or, failing that, hypophysectomy. The patient was handed over for X-ray treatment to Béclère, who reported that after ten sittings the headache, vertigo and vomiting had disappeared for a fortnight, and that considerable improvement in vision had taken place.

J. D. ROLLESTON.

POLYGLANDULAR SYNDROME DUE TO PITUITARY OVER-(238) ACTIVITY AND THYRO-TESTICULAR INSUFFICIENCY.

(Syndrome polyglandulaire par dyshypophysie et par insuffisance thyro-testiculaire.) L. RÉNON, A. DELILLE, and R. MONIER-VINARD, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, 1909, p. 204.

A MAN, aged 36, was admitted to hospital with the following history: —From childhood to adolescence he had suffered from chilblains. His growth had been marked by the disproportionate size assumed by the hands and feet in relation to the trunk. His sexual appetite developed late, and had always been weak. The first sexual congress took place at twenty-six. Syphilis was contracted at twenty-eight. Polydipsia with polyuria, and increasing obesity with complete anaphrodisia and impotence, had developed two years before admission, and were accompanied by ocular troubles which were attributed to syphilis and progressive loss of memory. On admission, in addition to enlarged frontal sinuses, thick-walled cranium, and disproportionate hands and feet, the sella turcica, as shown by X-rays, was increased in size. His facial aspect and mental condition closely resembled that of myxœdema. The writers analyse his symptoms and suggest that some were due to testicular incompetence, some to thyroid insufficiency, and others to pituitary over-activity. Syphilis may possibly have accentuated the glandular lesions, since some of the troubles were subsequent to infection. The writers proposed to treat the case by the administration of thyroid and ovarian extracts combined with radiotherapy. If that failed, hypophysectomy would be justifiable.

J. D. ROLLESTON.

DOES THE JEWISH RACE ENJOY AN IMMUNITY WITH (239) REGARD TO ALCOHOLISM? (La race juive jouit-elle d'une immunité à l'egard de l'alcoholisme?) L. CHEINISSE, *Semaine méd.*, Dec. 23, 1908, p. 613.

In this article the author discusses the question of whether there is evidence that the Jewish race enjoys any special immunity as regards alcoholism and the effects of alcohol.

It is generally admitted that the Jews are distinguished by remarkable temperance. They do not, however, abstain entirely from alcohol, and in certain countries alcoholism is beginning to spread among a portion of the Jewish population.

A difficulty encountered in dealing with the public statistics of alcoholism is that they do not furnish information regarding the number of alcoholic subjects in this or that class of the population of a particular country, but tell only the average amount of alcohol consumed. One can, however, draw some deductions regarding the former question from a study of the effects of alcohol as seen in hospitals, asylums, prisons, etc. Thus while nervous affections are specially frequent among the Jews, it is of interest to note that the diseases of the nervous system which are directly caused by alcoholism, *e.g.* delirium tremens, are not common among them. The same obtains in regard to those infectious diseases in the causation of which alcohol is a powerful predisposing factor. In hospitals the inmates of which are mainly Jews who have not as yet conformed to the drinking habits of the surrounding community, the statistics are remarkable. Thus in the Beth Israel Hospital in New York, among 3000 patients admitted, only 4 (or 0·13 per cent.) were cases of alcoholism or of affections directly attributable to alcoholism; whereas in the Boston City Hospital, which derives its patients from a mixed population, out of 7104 patients admitted, 226 (or 3·18 per cent.) were alcoholic.

The good influences of the temperate habits of the Jewish race is seen in the relatively low percentage of still-born children among them.

It has been shown that alcoholism plays a greater rôle in the causation of crimes against the person and crimes of an aggressive character in general than it does in those against property. Now it is in crimes of violence that the Jews show a low criminality. Among those classes of Jews which tend to hold more loosely by their traditions the same degree of abstinence is not present, and alcohol does not spare producing its effects on such.

It would appear that the slight development of alcoholism among the Jews, far from being due to some supposed immunity peculiar to their race, is in reality mainly the result of their social conditions, and especially of the intimate cohesion of the members of the race to one another—a cohesion engendered and cemented by centuries of persecution. A. HILL BUCHAN.

MORPHINISMUS. FRANZ H. MUELLER, *Berl. klin. Wochenschr.*, (240) Dec. 7, 1908, p. 2190.

NOTWITHSTANDING the great practical importance of the subject, there is but little accurate knowledge regarding it diffused among the community.

In treating cases of morphinism one must, in the first place, avoid such methods as the attempt to substitute, say, plain water for the supposed injection of morphia without the patient's knowledge. When the patient consults the doctor, he must be given to understand that he is suffering from a disease and has to be treated by medical means. An absolute essential in treatment is to persuade him to enter an institution; his case must not be undertaken at his own house. In the "Home" forcible methods ("*Zwangskur*") are to be avoided as dangerous. The dose of morphia must be reduced gradually, the determining factor in the rate of diminution being the physical state of the patient. Every means must be used to improve his general strength, and so to balance the effect caused by the withdrawal of the drug.

It is very important to gain the intelligent co-operation of the patient's friends. They also must realize that the patient is for the time rather a "sick" person than a subject for moral lectures. It may be a mistake for the doctor on all occasions to refuse to prescribe morphia for the patient, who, if he does not get it by a regular presciption, is pretty sure to do so by stealth.

As regards prophylaxis, physicians should avoid the use of morphia except where this is imperative. If it has to be given, there is less risk of inducing a habit if it be prescribed by the mouth, the patient not knowing the name of the drug, than if given hypodermically. If, however, the latter method has to be resorted to, one dose sufficiently large to produce at once the desired effect is safer than a series of small repeated doses. Above all, the syringe must never be entrusted to the patient.

A. HILL BUCHAN.

OBSERVATIONS ON CHOKED DISC. BRADLEY and CUSHING (241) (Baltimore), *Journ. Amer. Med. Assoc.*, Jan. 30, 1909.

THE authors base their conclusions upon observations extending over a period of four years' experimental and clinical work, covering about two hundred cases of brain tumour and as many more of patients exhibiting choked disc from other causes. The fact that choked disc has been produced and reduced experimentally is emphasized. Their conclusions are :—

1. Early injection with stasis of the blood vessels, œdema with projection of the papilla, round-celled infiltration, new tissue formation leading to atrophy, are all stages of the same process. These things are due to mechanical causes (distention of the sheath of Schwalbe by obstructed cerebro-spinal fluid); toxic elements play an insignificant part.
2. Acute internal hydrocephalus in a closed adult skull almost invariably leads to a choked disc; this is due to arachnoidal fluid forced into the optic sheath rather than to œdema spreading from the brain. Choked disc is often present with tumours which have not caused hydrocephalus, and is commonly absent in the essential hydrocephalus of infancy.
3. Small, slow-growing benign tumours so situated as to cause hydrocephalus by pressure may lead to a high grade of choked disc, while large, diffuse, malignant growths without pressure, although elaborating toxic products, may produce no change whatsoever in the disc.
4. Meningeal inflammation rarely causes choked disc unless an obstructive hydrocephalus is present. It is frequently seen after cranial fractures, apoplexies, etc., when infection is out of the question.
5. Because decompressive operations done for pressure conditions or infections are commonly followed by subsidence of choked disc, it is believed that a mechanical rather than a toxic condition is responsible for this lesion. C. H. HOLMES.

PSYCHIATRY.

HEREDITARY PREDISPOSITIONS. EUGENE COHN (Illinois), *Journ.*
(242) *Amer. Med. Assoc.*, Oct. 10, 1908.

THE author reviews, somewhat at length, the well-known arguments concerning the relationship of heredity to insanity, and certain social problems. He emphasizes the importance of intelligent selection among those contemplating marriage and the probability of certain relationship existing between the unstable, defective child, and the emotional shock or physical injury to the mother during gestation. He refers to the statistics compiled from institutions which give the percentage of insanity attributable to hereditary causes, as low as four and as high as ninety, and calls attention to the mathematical calculation, " based upon excellent authority, which accredits the parents with one-fourth, the grandparents with one-eighth, the great-grandparents with one-sixteenth, and the more remote ancestry with a like descending fractional ratio of responsibility for his or her characteristics." Finally, there should be a movement inaugurated for the general education of the public. Social and moral evils should become a matter of public information; over-study, overcrowding, hasty marriages, easily obtained divorces, vicious and licentious amusements, insufficient instructions to the child at home concerning sexual matters, all are matters to be thus considered. When the public are fully conversant with the truth, the author believes that radical changes will be everywhere evident. C. H. HOLMES.

CATATONIA IN CHILDHOOD. (Katatonie im Kindesalter.)
(243) RAECKE, *Arch. f. Psychiat.*, Bd. 45, H. 1, 1909, S. 245.

THE author reports ten cases of this condition, a study of which induces him to lay emphasis on the following facts:—

"Katatonie" occurs in childhood as well as in later life, more especially between the ages of twelve to fifteen years. Its chief symptoms are the same as those in adults.

As a rule the foundation of the condition is laid in a congenitally lowered psychical power.

Many so-called "imbeciles with katatonic symptoms" may have passed through an attack of "katatonie" in childhood, and thereby developed their loss of brain power.

The existence of an imbecile condition does not markedly affect this condition nor the prognosis.

A. DINGWALL FORDYCE.

A STUDY OF HYSTERICAL INSANITY, WITH AN ESPECIAL (244) CONSIDERATION OF GANSER'S SYMPTOM-COMPLEX. REPORT OF EIGHT CASES.
DILLER and WRIGHT, *Journ. of Nerv. and Ment. Dis.*, Jan. 1909, p. 25.

THIS study is a purely clinical one, and is chiefly concerned with the differential diagnosis of the condition. The authors are impressed with the relative frequency of hysteria in asylums, and the extent to which study of it is neglected by alienists. Of the cases, which are very superficially reported, six were acute and two chronic. The traits of the so-called hysterical character are mentioned. The greatest difficulty in diagnosis is in distinguishing hysteria from dementia præcox, particularly the catatonic variety.

The authors consider that Ganser's sign (*Vorbeireden*) may occur in a number of mental states, but that Ganser's syndrome (*Vorbeireden* plus *Dämmerzustand*) is very characteristic of hy -

terical insanity. They suggest that other mental processes, notably delusions, may exhibit the same attributes—apparent foolishness and almost conscious irrelevance—that are typical of the Ganser sign. It is remarkable that the authors have overlooked in their review of the literature Ritchie's penetrating psychological analysis of the sign in question.

ERNEST JONES.

THE ASSOCIATION TEST AND PSYCHO-ANALYSIS. ARTHUR (245) H. RING, *Boston Med. and Surg. Journ.*, Vol. clx., No. 1, 1909.

THE association test consists in reading off a series of stimulus words to the patient. After each word the patient responds verbally with the first word that occurs to him and without taking time for selective thought. The usefulness of the test depends upon the fact that associations accompanied by special emotion may be greatly prolonged; 1½ to 2 seconds is the average length of time required for a reaction. The test reveals sore spots in the patient's mental life and offers a ready means of getting at facts which are either forgotten or which for some reason of his own the patient wishes to conceal. Psycho-analysis consists in seeking, by a careful and prolonged search through the life-history of the patient, to find explanation in some early experience for the present manifestations of disease, and to trace the channel by which, through association, this experience has again been called into being. Several similar experiences become built up into a thought-system which may form a disturbing element in the mental life of the individual. The most characteristic thing about the reproduction of such a thought-system is that it is accompanied by the original feeling-tone or emotion which went with the primary experience.

D. K. HENDERSON.

MANIACAL-DEPRESSIVE INSANITY OF KRAEPELIN. (246) THOMAS DRAPES, *Journ. Ment. Sc.*, Jan. 1909.

KRAEPELIN'S object appears to be to group cases of insanity in such a way as to constitute a real help to diagnosis and prognosis, and is, so far, highly commendable. But the grounds on which such grouping of symptoms is held to warrant their being regarded as distinct varieties of insanity, having a definite course, and recognisable as such, are inadequate. Any method of classification which is based on symptoms merely is a fallacious one. In a condition so protean in its manifestations as insanity we can hardly expect any number of cases to follow a similar course; and, as a matter of fact, the symptoms in numbers of cases of insanity may at one period of their course resemble those of one of the so-called "varieties" of insanity, and at another time may correspond with those of quite a different grouping. There is no constancy in the clinical phenomena. Such irregular forms it would be much better to include under the general designation of " mixed " insanity, which would cover a large number, possibly the majority, of the chronic cases in asylums.

The term " Maniacal-Depressive Insanity," while so far useful as indicating the existence of this mixed class, a fact hitherto ignored in systems of classification, is too restricted when used, as Kraepelin uses it, to imply a distinct variety of insanity. He himself practically admits this in giving it the synonym of " Circular Stupor," from which we infer that stupor may occur as well as the maniacal and melancholic phases from which the term is derived. Hallucinations or delusions may or may not be present. The features which these irregular forms of insanity, which Kraepelin seeks to constitute a class to themselves, present are too vague and indefinite in character and sequence of occurrence to warrant their being grouped together as a separate disease entity. The very cases which he describes as, presumably, typical of the class are so dissimilar in their clinical features and course, that, without a strongly conceived bias in favour of Kraepelin's view, no one would think of placing them in the same category. The diagnostic symptoms of maniacal-depressive insanity—" by far the most obvious clinical feature of the disease "—are *the strong impediment of volition, and the absence of apprehensive restlessness* so clearly marked in melancholic cases. Yet in certain of the typical cases described apprehensive restlessness was quite a prominent symptom. And in his lecture on " Mixed Conditions of Maniacal-Depressive Insanity " Kraepelin states that " a cheerful state of mind with *facility of expression of the will* usually accompanies maniacal-depressive insanity." As this condition is the direct antithesis of strong impediment of volition previously insisted on as the diagnostic symptom of the " disease," the two statements would appear to be hopelessly irreconcilable. A similar inconsistence is to be noted as regards a third symptom, *impediment of cognition*, which is said to be " a symptom regularly accompanying the state of depression in maniacal-depressive insanity," and which is illustrated by a case in which the patient " has absolutely no clear idea of her position, does not understand what goes on around her, and cannot solve any mental problems," while in a case previously described the patient was said to have " the most perfect comprehension of his surroundings, and was able to follow difficult trains of thought." To group such cases under the same heading, with the consequent implication that they possess an inherent similarity such as would justify their being incorporated into a class peculiar to themselves, can have no other result than to create confusion.

This confusion is not lessened by the statement that " maniacal-depressive insanity is often called circular insanity (folie circulaire), on account of the cycle of recurrent conditions." Can anything be more dissimilar than the two conditions ? Folie circulaire is characterised by the utmost uniformity in the successive occurrence of the different phases which together make up the cycle, and these usually occur at regular intervals. But cases such as those described by Kraepelin exhibit extreme irregularity ; there is no regular sequence of recurring mental conditions, and if the mere fact that these vary or alternate in the most capricious fashion is sufficient to justify their being regarded as forms of folie circulaire, then that term may be equally applied to almost all varieties of insanity, and its usefulness as indicating one very special and distinctive form is thereby rendered nugatory.

The contention that there is a distinct psychopathic entity corresponding to what Kraepelin terms " maniacal-depressive insanity " is, therefore, hardly sustainable by observed facts, even as detailed with such ability by this eminent authority.

AUTHOR'S ABSTRACT.

IMMUNITY AGAINST TUBERCULOSIS IN GENERAL PARESES.

(247) ROSANOFF (King's Park, N.Y.), *Journ. Amer. Med. Assoc.*, Feb. 13, 1909.

THE records of 1056 insane patients were examined, of which 214 cases were of general paresis. 23·2 per cent. of the total number suffered from tuberculosis of some form, while but 2·3 per cent. of the patients suffering from general paresis showed active tuberculous lesions. The deduction is, that a heightened immunity against tuberculosis probably exists in cases of general paresis. The author concludes, however, that the number of cases is too small to justify any too definite conclusions, and invites further investigation. C. H. HOLMES.

TREATMENT.

PSYCHOTHERAPY AND THE CHURCH.

CLARENCE FARRAR, (248) *Journ. of Nerv. and Ment. Dis.*, Jan. 1909, p. 11.

THIS is a hostile, but on the whole well-founded, diatribe against the recent "Emmanuel movement." The tenour of the article may be seen from the following paragraph (p. 19):—

"From every point of view it is clear, after searching the scriptures of Worcesterism, that in spite of its medical advertising, the organisation is strictly and essentially religious, that its object is to renew the waning prestige of the church, and that its trick is to offer suffering humanity a theologic pill to purge melancholy, after making it a little more palatable to our modern consciousness by means of a thin medical sugar coating." ERNEST JONES.

SOME PRINCIPLES OF CEREBRAL SURGERY. HARVEY CUSHING (249) (Baltimore), *Journ. Amer. Med. Assoc.*, Jan. 16, 1909.

THE importance of surgeons who perform cerebral operations being skilled neurologists is emphasized. Attention is called to the fact that the so-called functional nervous disturbances are frequently masks only for serious organic diseases which have been overlooked. Modes of anæsthetizing, details in technique, and the dangers of lumbar puncture are discussed.

The following summary is made to emphasize the technical points of this paper :—

1. The continuous auscultation of the heart-beat and respiration during anæsthesia.
2. The sub-temporal and decompressive operation as an early measure and a step preliminary to a possible subsequent tumour extirpation.
3. The dangers of lumbar puncture in the presence of a degree of subtentorial pressure sufficient to produce a cerebello-medullary foraminal hernia.
4. Value of a continuous lumbar drain during the course of explorations for lesions of the hemispheres.
5. The principle of outward dislocation of normal tissue to avoid the risks of compression or mutilation during deep explorations.
6. The satisfaction of such intracranial procedures as the ganglion operation for trigeminal neuralgia when once they are put on a basis of comparative safety.

Altogether the paper is notable for its clearness, briefness and its excellent drawings and photographs. C. H. HOLMES.

Reviews

PHYSIOLOGY AND PATHOLOGY (FUNCTIONAL EXAMINATION) OF THE HUMAN SEMICIRCULAR CANAL APPARATUS. (Physiologie und Pathologie (Functions-Prüfung) des Bogengang-Apparates beim Menschen.)

ROBERT BÁRÁNY, Wien. Wien: Franz Deuticke, 1907 (Edinburgh: Otto Schulze & Co.). 2.50 M.

THE great importance of this brochure of Bárány's must serve as an excuse for a somewhat extensive review. In the work itself the reader will find references to the writings of Purkinje, Flourens, Goltz, Mach, Breuer, Crum Brown, Ewald, Hitzig, Abels and others, along with excellent though simple diagrams which elucidate the text considerably.

ANATOMY AND PHYSIOLOGY.

The vestibular apparatus consists of the utricle, saccule and three membranous semicircular canals along with the endolymph they hold. The canals are dilated at the ampullæ—the diameter of the canals being that of a pin while the ampullæ are about the size of a pin's head. In the ampulla is the crista, with its hair cells and cupula from which the stimuli, set up by movements of the endolymph, pass by way of the vestibular nerve and its ganglion in the internal auditory meatus to the nucleus in the medulla and thence to Deiter's nucleus. From Deiter's nucleus fibres radiate (1) to the nuclei of the motor nerves of the eye muscles; (2) to the motor neurones of the spinal cord on both sides. The ocular movements of vestibular nystagmus are induced by the former, and the irregular gait characteristic of violent vestibular irritation by the latter.

The following device, employed by Bárány, gives the relative positions of the three semicircular canals of the right side when the head is upright. Lay the arms against the sides of your body, and then, bending the elbows at right angles, palms upwards, bring the hands so that they meet in the middle line, the middle fingers touching and enclosing an angle of 90°. The position of the forearms and hands thus corresponds to the long axes of the right and left petrous pyramids in the skull. Now, leave the right hand in its position, and, bending the fingers of the left hand at right angles to the palm, slightly pronate the left forearm and place the hand thus bent on the right hand, so that the ulnar borders of the palms lie together and the little finger of the left lies across the palm of the right hand, at the level of the metacarpo-phalangeal joints. In this position the palm of the right hand represents the plane of the right horizontal (external) canal, the fingers of the left hand the plane of the anterior vertical (superior) canal, and the palm of the left hand the plane of the posterior vertical canal of the right side. The convexity of the three canals is turned towards the free borders of the hands—*i.e.* the horizontal outwards, the anterior vertical upwards, and the posterior vertical upwards and backwards. If you now reverse your hands and superimpose the right on the left so as to give the positions of the semicircular canals on the left side, you will notice that, while the planes of the two horizontal canals (right and left) correspond, the right anterior vertical canal lies in the same plane as the left posterior vertical, while at right angles to them lie the left anterior vertical and the right posterior vertical. To go back to the original scheme for the right side, we find that the ampullæ of the right horizontal and anterior vertical canals lie close together at the base of the first finger of the right hand. The ampulla of the posterior vertical canal lies at the base of the metacarpal bone of the little finger of the left hand. It is obvious that the planes of the canals alter with each movement of the head—thus if the head is bent forwards 90° the horizontal canals become vertical, and so on.

By his experiments on pigeons, Ewald showed that movement of the endolymph from the convexity of the right horizontal semicircular canal to its ampulla caused horizontal nystagmus to the right, and movement of the endolymph in the opposite direction set up horizontal nystagmus to the left. Vestibular nystagmus is of the following type:—*e.g. horizontal nystagmus to the right* consists of a quick twitch of the eyes to the right and a slower movement to the left, and is always most distinct when the patient is made to turn his eyes in the direction of the rapid twitch—in this case to the right; on the other hand, the nystagmus will be lessened or abolished when the patient looks towards the left. The clinical methods usually employed in order to investigate the condition of the vestibular apparatus are—I. ROTATION; II. SYRINGING with hot or cold lotion (CALORIC NYSTAGMUS); III. GALVANISM; IV. CONDENSATION and RAREFACTION (fistula symptoms).

I. ROTATION.—The patient is seated in a turning chair with his feet free of the floor, and the chair is rotated at the rate of ten complete revolutions in twenty seconds. Smoked glasses are sometimes worn, otherwise the nystagmus may be inhibited by the patient fixing his eyes upon some object. At the end of the tenth turn the rotation is suddenly stopped and the duration of the resulting nystagmus is measured by a watch. Rotation is said to be "to the right" when the patient is turned from left to right in the direction of the hands of a watch with its face upwards, or as in the military command "right about turn." *Effect of Rotation.*—When, with the head in the erect position, an individual is rotated from left to right, the movement affects only the two horizontal canals, as they alone are in the plane of rotation. At the beginning of rotation the endolymph in the right canal, in virtue of its fluid inertia, flows towards the ampulla, relatively speaking. In the left canal it flows away from the ampulla. If rotation is continued, the endolymph as time goes on catches up with the movement of its wall until it rotates at the same rate. If at this moment the rotation of the individual be abruptly stopped, the movement of the endolymph will continue, but the flow of the endolymph relative to its ampullæ will be in the reverse direction to what it was at the beginning of rotation. For this reason nystagmus during rotation is the opposite of that after rotation—*e.g.* at the *beginning* of rotation from left to right there is nystagmus *to the right,* mainly due to the movement of the endolymph in the *right horizontal canal* from the smooth end towards the ampulla, whereas at the *end* of rotation there is nystagmus *to the left,* mainly due to the movement of the endolymph in the *left horizontal canal* from the smooth end to the ampulla. Thus the nystagmus produced on stopping tests the left vestibular apparatus more than the right. It is almost unnecessary to say that nystagmus during rotation cannot be observed unless one is seated on a revolving platform facing the patient (as Bárány has been), and that it is the "*after-nystagmus*" which is of interest clinically. We can produce nystagmus in any direction we please by altering the position of the head from the vertical—backward, forwards or sideways, and, of course, by rotating to the left instead of to the right. By inclining the head 90° towards the right shoulder and rotating we induce a vertical nystagmus; by bending the head forwards we induce a rotatory nystagmus (to the right if we rotate to the right). The *Laws of Nystagmus* are:—(1) Each semicircular canal induces nystagmus in the same plane as its own (Flourens); (2) the nystagmus due to rotation corresponds to the line of intersection of the horizontal plane with the cornea.

II. Caloric Nystagmus.—If a patient with normal vestibular apparatus has his right ear syringed with water below the body temperature when the head is held in an upright position, horizontal and rotatory nystagmus to the left is produced; if the water used be warmer than the body temperature the nystagmus is to the right. If the head be bent down towards the floor through 180°, so that the vertex faces the floor, the nystagmus is the reverse of that given above. The explanation is as follows:—When the head is upright the summit of the superior semicircular canal is the highest point in the labyrinth, while its ampulla lies lower down near the outer wall of the labyrinth: in consequence, if one syringes cold water against the outer wall, the fluid in the canal moves from the summit down towards the ampulla. Caloric nystagmus holds good, if the vestibular apparatus is intact, whether the membrana tympani be intact or destroyed; if the heat (or cold) of the fluid used be great the reaction is quicker; if the fluid be at body temperature there is no reaction. If the vestibular apparatus be destroyed or the vestibular nerve paralysed, there is no nystagmus on syringing with hot or cold water. In certain cases the method fails and in others it is contraindicated (traumatic perforations), but the same result can then be got with cold air. Bárány recommends the use of Hartmann's cannula and the Politzer bag filled with lotion in testing for caloric nystagmus—the ordinary syringe does not hold enough. It is, of course, necessary to test the patient for spontaneous nystagmus before commencing the functional examination of the vestibular apparatus. The caloric method has this advantage over the rotation method that, by it (caloric nystagmus), one can test each ear separately: as before stated the rotation method tests both ears —though not equally.

III. GALVANIC NYSTAGMUS.—Galvanism may be used to test both ears together, or each may be separately examined: in the latter method one electrode is held in the hand and the other is applied to the mastoid process of the ear to be examined: in this way currents of 10-25 MA. may be used. When the kathode is applied to the right ear you get rotatory nystagmus to the right; when the anode is used there is rotatory nystagmus to the left.

IV. CONDENSATION AND RAREFACTION OF THE AIR IN THE EXTERNAL MEATUS.—This is carried out by means of an olive-shaped ear-piece attached to a rubber bag: the ear-piece fits tightly into the meatus, and by compressing or relaxing the rubber bag the air in the meatus is condensed or rarefied. This experiment is practically the same as Ewald's, and is, of course, only of use in cases in which a fistula exists between the middle and inner ear. The direction of the nystagmus produced cannot always be accurately predicted, but the effect of rarefaction is always the opposite of that due to condensation.

PATHOLOGY.

A. ACUTE DESTRUCTION OF THE LABYRINTH.—This occurs in acute suppuration in the labyrinth, in hæmorrhage into the labyrinth, due to arteriosclerosis or leukæmia, in syphilis, in fracture of the base, etc. Patients with unilateral destruction of the labyrinth lie on the sound side and look towards the injured or diseased side. Immediately after the injury marked horizontal and rotatory nystagmus occurs in both eyes *to the sound side*, along with giddiness, sickness and vomiting, loss of balancing power, etc. In these cases the caloric and condensation tests give no reaction—*i.e.* they have no effect on the spontaneous nystagmus already present. As a rule the concomitant phenomena disappear earlier than the nystagmus, so that in two or three weeks all symptoms of labyrinth destruction have disappeared except slight nystagmus, and the case has now passed into the stage of

B. "LATENT" LABYRINTH DESTRUCTION. — This latter condition can be diagnosed by the caloric and also by the rotation test: nothing further need be said about the caloric reaction in such a case, but the application of the rotation test requires a little explanation. It will be remembered that if we rotate a patient to the right, although both labyrinths are stimulated, the right one is more stimulated than the left *during the rotation*, whereas at the end of the rotation it is the left labyrinth that is more stimulated. It follows that if one labyrinth be destroyed the "after nystagmus" mainly due to this laybrinth will be less marked than that mainly due to the other (healthy side). Thus if the right labyrinth be destroyed, and if the patient be turned to the right, the nystagmus produced on stopping, as it is mainly due to the left labyrinth, will be of longer duration than that produced after turning such a patient to the left: in such a case we might find a duration of thirty seconds after turning the patient to the right and only fifteen seconds or less after turning him to the left.

C. CIRCUMSCRIBED DISEASE OF THE VESTIBULAR APPARATUS. —The prominent symptom here is vertigo, which may be of two varieties—(1) Severe spontaneous attacks lasting half an hour or more, with marked associated phenomena—nausea, vomiting, palpitation, etc.: nystagmus is usually to the affected side: the patient feels well in the intervals between attacks; (2) attacks set up by shaking the head, stooping, taking alcohol, etc.: associated phenomena are usually absent: nystagmus is present during attacks. Both these forms occur in cases of labyrinth fistula associated with deafness and tinnitus.

Vertigo is also a symptom of disease in the vestibular tract from the end organ to the medulla; if the lesion be in the vestibular nerve, acoustic phenomena will usually be present; but if it be in the medulla, in the nuclei, or in the connecting fibres between the nuclei and cord, then there may be no disturbance of hearing. Later the association of other cranial nerve paralyses renders diagnosis easy as long as the excitability of the vestibular apparatus remains normal.

The differential diagnosis between vertigo due to neurasthenia and that due to labyrinthine lesions is often very difficult: in labyrinthine cases the vertigo induced by rapidly moving the head is more violent than in neurasthenia; and, further, it is often possible to produce vertigo and nystagmus to the affected side by simply inclining the head backwards, without rotating at all.

Bárány does not go fully into the diagnosis of cerebellar abscess, but refers his readers to Neumann's well-known work, "Der Otitische Kleinhirnabszess" (Deuticke, 1907): he points out, however, that, in cases in which the labyrinth excitability on one side has been lost (say on the right side, the left side being normal), and yet marked rotatory nystagmus to the right is present, we can diagnose an intracranial lesion, because nystagmus to the right is due to irritation of the right vestibular tract: but in this case we know that the right vestibular end organ is not functional: therefore the cause of the nystagmus must be intracranial. Again, if the nystagmus arise from irritation of the healthy labyrinth it will diminish in intensity as time goes on, whereas if the cause be intracranial it will go on increasing. Bárány gives the following rules for the diagnosis of intracranial diseases affecting the vestibular apparatus:—

(1) When voluntary power over the ocular muscles is lost and all nystagmus is absent the lesion is in the medullary nucleus.

(2) When voluntary power over the ocular muscles is lost along with the rapid phase of nystagmus, but the slow phase is present, the lesion is above the nucleus.

(3) When voluntary power over the ocular muscles is lost, but vestibular nystagmus is complete and unimpaired, the lesion is in the angular gyrus.

INDICATIONS FOR OPERATION.

A. In *Acute Suppuration in the Labyrinth*, if accompanied by fever, headache, mastoid pain and tenderness or subperiosteal abscess, immediate operation is indicated. If these severe symptoms be absent we may, as in appendicitis, either operate at once on the labyrinth or wait for five or ten days till a barrier has had time to form.

B. In *Latent Diffuse Suppuration in the Labyrinth*—the labyrinth operation must be performed at the same time as the radical mastoid operation, for it is in this condition that post-operative meningitis is most likely to occur.

C. In *Circumscribed Suppuration in the Labyrinth*—the state of the hearing power influences our procedure: if this be bad in the affected ear the complete (labyrinth) operation should be performed, but if the hearing be good, or if that of the other ear be poor, it is advisable not to interfere with the inner ear. In circumscribed suppuration in the labyrinth the radical mastoid operation frequently results in closure of the fistula and disappearance of the vertigo. If, however, the disease spreads and diffuse purulent labyrinthitis results, the case calls for immediate operation on the inner ear.

J. S. FRASER.

TETANY IN CHILDREN. (**Die Tetanie der Kinder.**) Prof. Dr THEODOR ESCHERICH. Vienna: Alfred Hölder (Edinburgh: Otto Schulze & Co.). 7.20 M.

THIS very able and interesting work has the great advantage of being founded not only on wide reading, but also on the extensive experience of seventeen years spent in the clinics devoted to the diseases of children in Graz and Vienna.

Escherich divides the tetany of early life into (1) infantile tetany—*i.e.* that which occurs in children under three years old; and (2) the tetany of later childhood. The former is much commoner than the latter, and differs from it, and from adult tetany, in being generally associated with laryngismus and convulsions, which are here spoken of as " tetanoid conditions." The history and literature of the subject are described, and full credit is given to the English writers—Hamilton, Clarke, and Cheyne—who were the first to describe the disease, and also to Gee, Cheadle, Abercrombie and others, who contributed to its literature in the later part of the nineteenth century. In 1890 the characteristic electrical phenomena were first described by Escherich and Wagner; and since that time, with the exception of some Italian work, nearly all the important advances in our knowledge of tetany have come from German-speaking countries.

With regard to the pathogenesis of the disease, Escherich holds strongly that all forms of it, operative as well as other, are due to insufficiency of function of the parathyroids.

The conception of the term tetany as used here is a wide one. It is not restricted to the characteristic muscular spasm of the extremities; and " infantile tetany " is held to include any condition of functional spasm of muscle which sets in in children under three years owing to the presence of the so-called " tetanoid change " in the nervous system which some authors prefer to call " spasmophilie." The manifestations of the disease are described under six headings, as follows:—(1) Electrical hyper-excitability of nerves —which is regarded as the most important symptom of all, because it is the most constant and the earliest to appear; (2) mechanical irritability of nerves and muscles; (3) Trousseau's symptom;

(4) the characteristic muscular spasm of the limbs, that of the respiratory muscles, and general convulsions; (5) other nervous symptoms—sensory, vasomotor and trophic; (6) disturbances of the general well-being and tissue-metamorphosis.

Full and interesting accounts are given of the clinical features of the various types of tetany, of its pathological anatomy, its geographical distribution, and the influence of age, season, and the presence of other diseases on its occurrence. The etiology of the disease is then considered, and hæmorrhage into and arrest of development of the parathyroids are regarded as the essential causes; although some intercurrent affection or intoxication is needed also to determine the occurrence of the disease. Rickets is recognised as having an especially important influence in this way. After a consideration of the diagnosis and prognosis, the treatment is dealt with. The administration of thyroid and of parathyroid have not proved successful. Phosphorus has seemed of more value than any other drug. The diet is discussed and various other therapeutic measures. One case of severe tetany and convulsions is reported in which great benefit followed lumbar puncture.

The tetany of later childhood forms the subject of the second part of the book, which is much smaller than the first, but also of much interest and value. It is divided into four types:—(1) Acute idiopathic cases; (2) accidental or symptomatic cases (*e.g.* following infectious disease, nephritis, digestive disorders, tuberculosis, etc.); (3) the chronic form, with latent eclampsia, laryngismus, etc.; (4) the persistent form with pseudo-tetanus.

Escherich considers parathyroid insufficiency as being as important etiologically in puerile as in infantile tetany. Investigations into the subsequent history of tetany cases give an unfavourable view of the prognosis. Not only do a large proportion of the children die, but in after years very many of those who survive are found to be weakly, neurotic or mentally defective.

So much that is contradictory has recently been written about infantile tetany and its congeners, that a substantial and authoritative contribution to the subject such as this is, by so experienced a hand as that of the distinguished Viennese Professor, is sure of a hearty welcome from the profession. JOHN THOMSON.

LEHRBUCH DER NERVENKRANKHEITEN FÜR ÄRZTE UND STUDIERENDE. Fünfte, vermehrte und verbesserte Auflage.

Prof. Dr H. OPPENHEIM. Berlin: Karger, 1908 (Edinburgh: Otto Schulze & Co.). 37 M.

PROFESSOR OPPENHEIM'S "Text-Book of Nervous Diseases" occupies a position in neurological literature which places it beyond the range of ordinary criticism. We have already reviewed it in this Journal, and all that remains for us to do with regard to this fifth edition is to point out that its value has been greatly enhanced by the fact that the author has been prevailed upon to give, concisely and clearly, references to the chief and most recent sources of the literature on each subject, that over 40 new illustrations have been added, most of which are original, and that the contents have been enriched and strengthened by all that is most valuable in the additions which the past four years have made to our knowledge of nervous diseases and their treatment. We note, for example, new data as to the condition of the pressure-sense in anæsthesia of the skin and in affections of the peripheral sensory nerves; with regard to the reflexes, their examination, the significance of the abdominal, epigastric and scrotal reflexes, the effect of injections of stovain, novocain, and other chemicals upon them, recent results of investigation into the topographical relation of sensory innervation of the skin to the spinal cord, etc. The section on peripheral paralysis has been largely added to, and it now contains a new paragraph on peripheral paralyses of the intercostal nerves. The question of spinal and cortical localisation has been brought up to date. We note that Oppenheim agrees with Sherrington's views on cortical localisation. He describes Marie's recent teaching on the localisation of aphasia, and thinks that he has completely failed to prove his point, both in this matter and in his view of the condition of the intelligence in aphasia.

It will be seen that the references are not limited to the advances that have been made by German neurologists, great as these have been. Professor Oppenheim has gathered his harvest from the fields of the world, and has given us the sifted grain. The labour entailed must have been enormous. We congratulate Professor Oppenheim on its achievement, and we note with pleasure that this review has contributed its share to the great result.

ALEXANDER BRUCE.

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Review
of
Neurology and Psychiatry

Original Articles

REMARKS ON SCIATICA AND MORBUS COXÆ SENILIS, ESPECIALLY WITH REGARD TO THEIR TREATMENT.

By KARL PETRÉN, M.D.,
Professor of Medicine, Upsala. From the Medical Clinic of the University.

(With Plates 5, 6 and 7.)

WITH regard to the question of the nature of sciatica, the prevailing opinion has for a long time been that certain cases are to be considered as neuritis, others only as neuralgia. This opinion was, as far as I know, first expressed by Landouzy in his well-known exhaustive work on sciatica (1875). A similar view has in later years been held by Homolle, Grasset, Rauzier, Eichhorst, Stintzing, Bernhardt, Feddersen, Sommer, Oppenheim, and others. According to this view, those cases were to be looked upon as neuritis in which there were found "Ausfallserscheinungen" (*i.e.* phenomena of lost function), such as more or less marked atrophy of the muscles, loss or weakening of the Achilles-tendon reflex, impairment of cutaneous sensibility.

On the other hand, however, the view which considered all well-marked cases of sciatica as neuritis has been also supported. This opinion seems first to have been expressed by Fernet (1878), who, however, has not discussed in detail the grounds for it. Somewhat later Hammond advocated this view. The same position is very strongly held by Gowers, who points out that all stages occur, from the severe cases with phenomena of lost function which must be regarded as neuritis, to those other cases where these phenomena are not found, and that the former cases are not at first associated with loss of function, thus giving rise to a picture usually regarded as neuralgia. Gowers consequently concludes that all cases with marked symptoms of sciatica are to be considered as neuritis or perineuritis, and that only cases with transient pains, coming and going, may be regarded as neuralgia. This view, according to which sciatica as a rule is due to neuritis, has since then also been supported by other authors such as Eulenburg, Strümpell, Moritz, Pitres and Vaillard, Gibson and Fleming, Lloyd and Schultze. As a reason for this supposition, Schultze also states that the pains of sciatica do not come on under the type of limited attacks as is usually the case in neuralgia, but are more constant, a difference between the affections to which Lasègue (1864), had already called attention. For my own part, I cannot but think that the reasons given by Gowers and Schultze are conclusive as to the nature of the disease. As a further support for the same view, those observations might possibly be quoted which have been made by Pers at operations for sciatica (viz., neurolysis), to the effect that in at least half the number of cases the nerve has been abnormally red; this might possibly be regarded as a support for the assumption of an inflammation, most likely a perineuritis.

Thus, on the one hand, I must fully agree with the opinion nowadays held by many, that marked symptoms of sciatica can not be explained as neuralgia, but must be attributed to a real anatomical inflammation. On the other hand, I must especially call attention to a large group of cases of sciatica, the special position of which has hitherto remained quite unnoticed in the literature. They show, as regards the symptomatology, an essential difference from the usual forms of sciatica, and their theoretical interpretation is, at least, more uncertain than that of the usual forms of sciatica.

For a long time I have had an opportunity of observing that cases exist which subjectively give the characteristic picture of sciatica: pain along the course of the nerve right down to the leg or foot, increased pain on moving the leg and more or less marked limping gait, but in which painful spots are to be found along the course of the sciatic nerve or its branches lower down in the leg, or over the point of emergence of the nerve. What is regularly found in these cases—as also in the majority of other cases of sciatica, according to my experience—is tenderness of the muscles above and in front gluteus maximus, *i.e.* in the region of the gluteus medius. This painful point is, as far as my experience goes, not situated so near the iliac crest as Valleix makes his "point iliaque," but lower down towards the border of the gluteus maximus, corresponding to about the thickest part of the gluteus medius. Its position is consequently not far from the highest part of the border of the sciatic notch, and might be situated about midway between the "point iliaque" and the "point fessier" of Valleix. It is not unusual to find in these cases, as also in ordinary cases of sciatica with painful spots along the nerve, an abnormal resistance when palpating this region. In these cases of sciatica without painful spots along the nerve the symptom of Lasègue is also decidedly present, but not to any higher degree.

The occurrence of these cases characterised by a group of symptoms otherwise corresponding to those found in sciatica, but with tenderness on pressure only over the gluteus medius, not over any point of the nerve, has for a long time attracted attention, and I have observed such cases for the last fifteen years, but have not previously published anything on the subject. According to my experience, these cases naturally constitute a minority, but by no means a very small percentage of all cases of sciatica. The occurrence of such cases has remained generally unnoticed in the literature. It is, however, remarked by Eichhorst and by Erben (and in the older literature by Trousseau, quoting Homolle), that there are cases of sciatica in which there are no points of tenderness on pressure on the nerve. They have not mentioned the constant presence, which I have here emphasised, of tenderness to pressure in the region of the gluteus medius. Feddersen has observed that in rheumatic sciatica the symptoms of myositis may appear first, the ordinary symptoms of sciatica following later, but he has not noted the occurrence of cases with the general picture of sciatica, but without the points on the nerve trunk of tenderness on pressure. In the text-books, it is true, the relation between sciatica and myositis is discussed, but in a sense entirely different from that mentioned by me.

On the one hand, the importance of a differential diagnosis between sciatica and myositis is pointed out, and as a distinguishing character between them it is generally noted that in myositis the tenderness and pain extend more diffusely over the leg than in sciatica (Moritz, Hallion, Eichhorst, Bernhardt). Cases of myositis affecting other parts of the lower extremities and giving rise to pain of other localisation than in sciatica do certainly exist; but it is at once apparent that these represent a complex of symptoms of quite another type than that to which I have directed attention, viz., the common picture of sciatica with the usual localisation of the pain, but with absence of tenderness to pressure over the nerve and presence of tenderness to pressure over a certain area of the gluteal muscles.

On the other hand, it is generally admitted that sciatica may be connected with a myositis, a lumbago being the primary affection, the inflammation spreading from this by contiguity (along the fascia, Eulenburg) until it reaches the great sciatic nerve (Eulenburg, Herter). These authors consequently assume that a myositis may give rise to a sciatica.

With regard to the type of sciatica under discussion the question is somewhat different. Here we are dealing with cases where a myositis of the gluteus medius seems to be proved (at any rate a circumscribed tenderness to pressure has been established, associated in many cases at least with an abnormal resistance of the muscles at the same place), but where that important symptom of sciatica-tenderness to pressure over the nerve is absent. With regard to our conception of these cases the question is first of all this: whether we are dealing with myositis alone or with a neuritis as well. Supposing we have to deal only with a myositis, then the apparent symptoms of sciatica must be explained through pressure on the nerve trunk by the inflamed muscles. In such cases the most evident suggestion is that this pressure would be exerted at the point where the nerve passes through the great sciatic notch, a myositis of the pyriformis muscle being the most likely explanation. The presence of a myositis of this muscle is difficult to establish with any degree of certainty on account of its protected position. Thus we have to content ourselves with the probable conclusion that an inflammation of the gluteus medius would often likely be connected with an inflammation of the adjoining pyriformis muscle, thus giving rise to pressure on the sciatic nerve.

On the other hand, it seems not permissible to neglect the possibility of the symptoms being attributable to a neuritis. I have mentioned above that in these cases a palpable resistance, as a rule, is found at the site of the tender portion of the gluteus medius. With regard to the immediate cause of this resistance it must be admitted that the first thing suggested is a myositis, an inflammatory process of the muscle. Granting this, the most plausible explanation, another possibility has, however, to be taken into consideration, viz., that the resistance on palpation might be due to a localised muscular defence on account of a circumscribed tenderness to pressure; this, again, might be due either to an inflammation of the nerve twigs supplying the muscle or possibly to an inflammation of the muscle itself (though not directly palpable). The site of the palpable resistance and tenderness corresponds fairly well to the superior gluteal nerve as it passes through the great sciatic notch.

Thus the assumption of a neuritis as the most probable cause of the tenderness is not excluded. Whether we are dealing with a myositis or with a neuritis of the superior gluteal nerve, it is evident that we must take into account the possibility of the inflammation having extended as far as the sciatic nerve, probably thus causing, in the first instance, a perineuritis. The fact that in these cases the nerve trunk has not been found to be tender to pressure would thus be explained by the perineuritis or neuritis not having extended along the nerve trunk, and by its being, especially where the muscles are well developed, somewhat inaccessible to palpation just at the margin of the great sciatic notch. This view implies that the nerve trunk is tender to pressure in as far only as it is the site of a perineuritis or a neuritis. This would seem to be very likely, if the view here put forth is correct, viz., that sciatica as a rule is due to a real inflammation of the nerve or its surroundings.

There are thus two possible explanations of the type of sciatica which I have described: (1) that the symptoms may be due to a myositis followed by compression of the nerve, or (2) that the inflammation may have extended to the trunk of the great sciatic nerve or its immediate neighbourhood, the strict limitation of the inflammation to that part of the nerve which lies exactly at the margin of the great sciatic notch having made it impossible for us to demonstrate the tenderness to pressure over the nerve-trunk. I do not think that we can at present decide which of these possibilities is the correct one. It may be that each holds good in different cases. I may add that rectal examination has not revealed any tenderness to pressure, although I have not examined every case with regard to this point, my observations having extended over many years.

If we accept the view that the type of sciatica here described is due to a localised perineuritis inaccessible to palpation and caused by a myositis of the surrounding muscles, that would correspond fairly well with the mode of origin assumed by Eulenburg and Herter in some cases of sciatica, viz., the inflammation from a lumbago extending by contiguity to the nerve. It seems more probable that the inflammation extends to the sciatic nerve from the surrounding muscles than from the long muscles of the back. As to the presence of lumbago in such cases, I have not infrequently observed this complication, but I have not arrived at any conclusion as to its relatively greater frequency in this type of sciatica than in the common form with painful points along the nerve.

I have already remarked that the occurrence of cases of sciatica of this type has hardly been noticed in the literature. There are, however, a few exceptions. Taking in the first instance the classical work of Valleix, I am doubtful whether he has observed similar cases or not. He emphasises the fact that what he calls "le point sacro-iliaque or posterieur," situated immediately external to the sacro-iliac articulation, is the painful spot found most constantly in sciatica, so much so that painful points on the sciatic nerve itself may be absent, the former only being present. This points to an experience similar to my own (although I would localise the area of constant tenderness to pressure further forwards and outwards than Valleix). Closer study of Valleix' descriptions, however, shows that what he calls painful points are not merely points at which tenderness to pressure is felt, but are also points where spontaneous pains are most acutely manifested (a fact which seems to have escaped later writers who quote his work). On the other hand, he admits that these two phenomena, spontaneous pains and tenderness to pressure, do not necessarily coincide in their localisation, although they do so as a rule. As to the cases with painful points along the sciatic nerve, I cannot find in Valleix precise information whether pain was present along the course of the nerve; consequently I cannot arrive at any definite conclusion as to whether his cases are really to be regarded as sciatica in the present sense of the word, or simply as affections localised in the hip, that is to say, the spontaneous pains being confined to that region.

Schreiber has expressed the opinion that a certain number of cases described as sciatica, especially as chronic sciatica, are really not sciatica, but are due to rheumatic processes in the muscles, tendons, fasciæ or ligaments in the hip-joint. He does not particularly mention morbus coxæ senilis, nor does he give information such as would permit of a definite conclusion as to the nature of his cases. In the "Text-Book on Massage and Medical Gymnastics" (1906), edited by Kleen, with the co-operation of other Swedish specialists, greater attention has been paid to this question. Kleen says: "As a matter of fact, we might equally well have dealt with sciatica in the chapter on affections of the muscles, the disease in a very great number of cases being of muscular origin, due to myositis in the neighbourhood of the nerve, especially of the gluteus max. and med." He does not, however, give further details. Dr Arvedson of Stockholm, a well-known and experienced specialist on medical gymnastics and massage, and director of an institute for training gymnastic teachers, has personally told me that he has for a number of years repeatedly observed cases of sciatica corresponding to the type I have described, with painful points, not along the nerve, but only over the gluteal muscles. I refer to his experience by his kind permission. As far as I can see, it is not by chance merely that this fact has been noted by Swedish medical men, for there is no doubt that we more frequently personally carry out such manual treatment as massage (evidently the best opportunity for close study of the question) than do the members of the medical profession of other countries.

I now pass on to the *treatment of sciatica*, and shall later return to the question of the course and the so-called chronic cases of the disease.

In a case of acute sciatica, unless it is very slight, *uninterrupted rest in bed* for a time seems to me to be unquestionably indicated. If the case is more severe in nature, the confinement to bed ought to be very strictly enforced (the bed-pan should be used, for instance). This should be continued until essential improvement is obtained. It is not possible to state definitely the length of time to be spent in bed, but I believe, as a rule, two weeks' rest at least is advisable, the time naturally varying according to the nature and course of each case. The great majority of authors seem to agree as to the enforcement of rest in bed when dealing with the first stage of an acute sciatica. Some English and American writers (Gowers, Clarke, Harburn, Herter) recommend, in accordance with the suggestion of Weir-Mitchell and Hammond, complete immobilisation of the affected limb by means of a long splint. I have never found any necessity for this.

As to the *treatment by drugs*, the majority of text-books recommend the use of salicylates, but without, as a rule, laying any special stress on these, mentioning them sometimes along with many other drugs (Oppenheim). For my own part I have for long taken a different position on this point, *having treated all cases, without exception, with salicylates.* Of recent years I have regularly used acetylosalicylic acid, in considerable doses, commencing as a rule with 6 grams a day. Even if the effect of the aspirin treatment is undoubtedly greater and more rapid in acute rheumatic fever than in sciatica, I am convinced from experience that the consistent treatment of sciatica with large doses of aspirin, in combination with confinement to bed, exercises a considerable influence on the progress of the disease. Feddersen and Schultze have recently expressed similar opinions, as well as v. Noorden and Treunel at the Congress at Wiesbaden in 1907.

During the last few years I have also frequently employed the external applications of salicylates (such as mesotan, unguentum salenæ, salite, spirosal), and I believe not without good effect. Treatment with drugs other than salicylates seems unnecessary in acute sciatica. In my experience, the use of narcotics of any kind may almost always be entirely omitted, when vigorous aspirin-treatment is employed along with confinement to bed. I need not dwell on the advantage of dispensing with narcotics in dealing with a disease, the duration of which is so uncertain as sciatica.

As to the *physical treatment* of sciatica, massage is, in my opinion, the most important method. There is greater diversity of opinion on this point than on any other detail of treatment. Some writers are strongly against the use of massage in acute and subacute sciatica, allowing it only in chronic cases (Christiansen, Eulenburg). Others, again, admit that it may be used at an earlier stage (Oppenheim, Edinger, Levison). According to my own experience, massage may be employed with the greatest benefit in subacute as well as acute sciatica. It must, however, be admitted that in the most severe cases of acute sciatica it seems advisable to wait for a time before commencing massage, using in the meantime rest in bed and aspirin. I do not believe it necessary, however, to prolong this expectation period beyond a week. Without doubt, in giving such wide indications for massage treatment, we make comparatively great demands upon the judgment and technical skill of the person who carries it out. Unsuitable treatment, especially if too vigorous, may undoubtedly aggravate the symptoms during the acute phase of an attack. For my own part, however, I can remember no case in which massage has increased the severity of the symptoms. I have had several opportunities of observing acute and severe cases in which massage, used at an early stage and along with rest in bed and salicylates, has induced a rapid recovery.

As far as I know, the indications for the use of massage in sciatica given in Sweden generally are similar to those here laid down. It is not unlikely that in our country, where those who practise massage and medical gymnastics are thoroughly trained (a two-years' course, including the study of the anatomy and physiology of the body), the number of those well acquainted with massage treatment is greater than in many other countries, though no doubt there are many places abroad situated as well as we are in this respect.

Massage of the nerve-trunk may also be combined with vibrations over it, either given manually or by means of one of the many apparatus in use. Personally I have no great experience of this method, but I have seen good results from it, and everything seems to point to its usefulness.

Observation of the type of sciatica here described is of interest as regards the treatment of this affection. This specially applies to massage treatment, for in these cases which have no tenderness to pressure over the nerve, but only over the gluteal muscles—over the gluteus medius as a rule—I have found by experience that massage is necessary only over the tender area. The nerve-trunk itself may be left untreated. In this way a result is obtained quite as satisfactory as that which follows in sciatica with painful spots along the nerve from treating the nerve-trunk itself with massage.

There is yet another method which I believe to be very useful, viz., *nerve-stretching.* I refer to the so-called bloodless stretching, having no experience of stretching performed by operation. With this restriction the method is frequently recommended in text-books. Different writers seem, however, to have different methods of procedure in mind. Some (Eulenburg, Eichhorst, Dollinger, Büeler—the last two quoted after Naegeli) state that nerve stretching is carried out by flexing the hip-joint as forcibly as possible, the knee being kept straight. This means, if I understand rightly, that this severe operation is to be performed once only, or, at any rate, only at long intervals. Edinger, on the other hand, recommends daily and successive stretchings by means of gradually increased flexion of the hip-joint (the knee being kept straight). Strümpell seems to hold a position midway between these two methods. He uses daily, but comparatively forcible stretchings, as far as I can make out. He would, however, reserve this method for the later stages of the disease. Goldscheider also recommends that the stretching be carried to such an extent as to cause severe pain. Sommer holds a similar view.

For my own part I have experience of nerve-stretching only as a method of treatment carried out very cautiously, and repeated frequently, sometimes daily. This corresponds most nearly to the method introduced by Schreiber, and recommended by Edinger. So far as I can understand, Edinger advocates that the operation be done while the patient is in the standing position. Goldscheider has constructed a special chair for the purpose, but this seems quite unnecessary. The best and simplest method is to place patient on his back, then raise the leg with the knee straight until a very moderate degree of pain is felt along the sciatic nerve. When this is repeated daily, it usually very soon becomes evident that the foot can be raised gradually higher and higher, *i.e.* an increasing degree of stretching is possible without giving rise to severe pain. If this treatment be carried out with sufficient care, without trying to force the stretching of the nerve, it may, in my experience, be early commenced as part of the treatment, even while the symptoms are somewhat severe. When dealing with the *most* severe cases, however, it seems wiser not to begin the stretching at once. Should pain or any other sign of exacerbation of the symptoms appear during this treatment, which I believe is more likely to happen than when massage only is used, it seems advisable to defer the nerve-stretching for a time. But nerve-stretching, when carried out as described here, is, in my opinion, a very effective mode of treatment, even in the acute stage of sciatica.

A Danish surgeon, Pers, a short time ago reported a series of cases of sciatica in which he performed neurolysis with good results. He assumes that pathological adhesions of the nerve-trunk are loosened at the operation, a supposition which he has not tried to confirm by control operations on healthy animals, or by post-mortem investigations on human bodies where sciatica has not been present. Should his assumption be found to be correct, it would imply that adhesions are frequent in sciatica, and would not exclude the possibility of gradually loosening, if not actually breaking, such adhesions by means of gradually increased nerve-stretching as described above.

I may point out in passing that I consider this method of nerve-stretching not merely as a therapeutic measure, but as the best way of examining a patient for Lasègue's symptom. It also affords a convenient indication, which may be easily registered, of the degree in which this symptom is present. Some writers recommend another method of testing for this symptom, the patient being in a sitting posture, but it does not seem to present the same advantages. Oppenheim recommends the test as here described, or with the patient in the standing position.

In this connection I would draw attention to the relation between the symptoms of Lasègue and Kernig. Some writers, Bechterew for instance, have lately pointed out the frequent presence of Kernig's sign in sciatica. I must give it as my decided opinion that *Lasègue's symptom in sciatica and Kernig's symptom in meningitis are one and the same phenomenon,* the symptom having received a different name in each of the two affections in which it occurs. The most common method of demonstrating Kernig's sign in meningitis (*i.e.* incapability of simultaneous flexion of the hip-joint and of extension of the knee-joint) is to place the patient in the sitting posture while he tries to extend the knee-joint. It may be equally well applied, however, by the patient trying to raise his leg with the knee straight, while he lies on his back. This is advocated by Kernig himself in his exhaustive work lately published on the occurrence of this symptom in meningitis. He indicates this as the simplest method of establishing the presence of his symptom. It is identical with the method advocated by myself, Oppenheim, and others, of testing for the symptom of Lasègue.

There seems to be no real reason for giving to the same phenomenon two different names according as it appears in either of the two affections, and this practice tends to confusion. As the most practical means of avoiding future confusion, I would propose that *the symptom be called the Lasègue-Kernig symptom.*

It is not difficult to explain why the same phenomenon should be found in these two different diseases. In the one case we have an inflammation of the nerve-trunk (perhaps sometimes also of the extra-dural portions of the roots); in the other we have an inflammation which has affected, among other parts, the intra-dural portions of the roots of the sciatic nerve. When testing for the Lasègue-Kernig symptom, stretching of both these portions—the nerve trunk as well as the nerve roots in their whole length—takes place, pain being elicited in both cases in spite of the different localisation of the inflammation, and of its more or less different nature.

The process of nerve-stretching (for therapeutic purposes) here described has been recommended by Wide and by Kleen, and is said by the former to emanate from Ling, the founder of Swedish gymnastics. There is every reason to assume that cautious and gradually increased nerve-stretching as here described now forms a very general method of treating sciatica in Sweden.

That nerve-stretching performed more recklessly may also give good results cannot be denied, this being recommended by such well-known writers. But it may be fraught with danger, and I do not believe it gives better results than the more gentle and gradually increased method of stretching. The grave danger which may accompany careless stretching of the nerve is very strikingly illustrated by the following observation :—

CASE I.—A. F. N., formerly a farmer, aged 56, from the Out-Patient Department, University Hospital, Upsala. Had previously been quite well. In 1892 had attack of sciatica on right side. After eight days' illness consulted a doctor, who, without an anæsthetic, performed a forcible (bloodless) stretching of the sciatic nerve (patient being on his back, the leg being raised with the knee straight). At that moment the patient was "paralysed" in his right leg, in which anæsthesia also appeared. The pain due to the sciatica, however, passed off at once. As far as one can judge from his description, a general paresis of all the muscles of the extremity developed. He could walk with the aid of a stick, but with considerable difficulty. This condition lasted for about half a year. Later the gait improved somewhat, as did also the sensibility, but the symptoms never entirely disappeared.

In 1893 symptoms of hyperæsthesia of the toes of the right foot were noticed, and on the external border of the foot a spontaneous ulcer appeared, which showed no tendency to heal. From this time on patient has suffered from pain in the foot. There has, however, been no return of the sciatica. In 1895 patient, on account of his illness, gave up farm-work and removed to Upsala. In January 1896 the fifth toe of the right foot was amputated by a surgeon, who, according to patient, considered the ulcer to be due to a suppurative inflammation of the metatarsal-phalangeal joint. But the ulcer took several months to heal and very soon opened up again. Patient states that during those years several doctors on different occasions made incisions into the soft parts surrounding the ulcer. No fragments of bone were found in the ulcer.

During September 1897 patient was for two weeks an in-patient at our Surgical Clinique (Professor Lennander) on account of the ulcer. It was then ascertained that the whole of the right leg, especially the part below the knee, was thinner than the left. Over the posterior aspect of the thigh and the posterior and external surface of the leg the sense of pain and of touch was diminished, the sense of pain absent. The urine contained from 1·6 to 0·4 per cent. of sugar.

During September and October 1900 patient was treated in the Medical Clinique for a right-sided pleurisy. During convalescence he had thrombosis of the right leg. During this time the urine contained at times a small quantity of sugar, which disappeared when the carbohydrates were reduced. Patient informs me that the ulcer on the right foot healed while he was in bed at this time.

The condition has since remained almost unaltered. The ulcer on the foot has at times been healed, at other times open. Patient is of opinion that the right leg has in the course of years become somewhat stronger. He has suffered from pain always confined to the right foot. He believes that the pain has been more intense when the ulcer was healed than at other times.

Patient was examined by myself on December 6, 1897, and was observed on several occasions in the Out-Patient Department of the University by my colleague, Dr Bergmark, who has been kind enough to let me have the details.

Examination, December 6, 1907.—No signs of any brain disease; no marked functional nervous symptoms. Sleep is fairly good when not disturbed by pain in the foot. The urine is at times free from sugar, at others contains a quantity less than 1 per cent. Patient, as a rule, keeps to no special diet, and has refused dietetic treatment for his diabetes.

The arms are not affected, the muscles of the hypothenar being normally developed on both sides. There is no paresis of the interosseous muscles of the hands. No disturbance of sensibility to pain in hands or fingers.

Sensibility of the left leg is quite normal in every respect. No disturbance of functions of bladder or rectum.

Right Leg: Movements and Reflexes.—Circumference of the right thigh and leg is somewhat less than on left side. Consistency of muscles of right leg is good. Power of flexion of right knee-joint somewhat reduced, extension very slightly reduced. Dorsal flexion of right ankle-joint possibly shows very slight degree of weakness. Plantar-flexion does not show definite alteration in power.

Gait is fairly good. Patient limps slightly on right leg. He cannot, however, stand on the right leg alone, even with the eyes open. He can stand on the left leg alone with his eyes closed.

The patellar reflex is present on the right side, but is diminished. The Achilles-tendon reflex is absent on the right side, but present on the left. Plantar reflex is normal on both sides.

Sense of Passive Position and Movement.—Passive movements of the right ankle-joint, even though slight, are correctly interpreted. Movements of the great toe are not recognised until they exceed 30°, movements of the other toes only when they are maximal.

Sensibility to Pain is diminished on all the posterior aspect of the right lower extremity and on the external as well as the internal surface of the leg, painful impressions being correctly perceived only over a narrow portion of the skin of the anterior surface of the leg. Sensibility to pain has been tested both with a needle (January 1908) and with the algesimeter of Alrutz (August 1908, Dr Bergmark). This examination, carried out partly with a weight of 2, and partly with one of 6 grams, reveals the presence of a hypalgesia over the whole of the posterior surface of the thigh and leg, as well as over the anterior surface of the leg (with the exception only of a narrow strip along the anterior border of the tibia). Over the perineum, penis and scrotum pricks are felt with precision and equally on both sides, the weight used being 2 grams.

Sensibility to Heat and Cold (Examination in October 1908 by Dr Bergmark).—Over the whole posterior aspect of the right lower extremity, and over the external surface of the right leg, as well as over the whole of the right foot with the exception only of the internal border, temperatures of 25° and 27° C. are not differentiated. Over the same areas a temperature of 45° C. is not appreciated as warm. Over the greater part of this thermohypæsthetic area temperatures even of 90° C. and 17° C. are not distinguished from each other. On the posterior part of the leg, however, this thermoanæsthesia does not reach the internal border. The appreciation of cold is somewhat better retained, the area over which 0° C is not appreciated as cold forming a comparatively narrow strip along the posterior aspect of the thigh. The patient states that he does not feel anything when the right foot is burned. On the right side of the scrotum a slight degree of uncertainty possibly exists with regard to the differentiation between 25° C. and 27° C.; on the left no such uncertainty exists.

Sensibility to Touch (tested with cotton wool; examination in May 1908, by Dr Bergmark) is disturbed on the posterior surface of the right lower extremity, the external part of the right leg and the whole of the right foot, very light touches not being appreciated. The area of anæsthesia to touch on the posterior part of the lower extremity is narrower than the area of slight degrees of hypalgesia and thermohypæsthesia. Over the perineum, penis and scrotum the slightest touch is correctly appreciated. Over some small areas of the posterior surface of the right lower extremity even firmer touches with the finger are not appreciated.

The ulcer on the foot still exists. It is quite circular, with sharply-cut borders and a diameter of 4 by 5 mm. It is situated on the external border of the foot, 2 to 3 cm. behind the (exarticulated) metatarso-phalangeal joint.

The condition which the patient now presents corresponds well to that of a syringomyelia, although the limitation of the symptoms to one side is uncommon. Otherwise they are very similar to those characteristic of a localised syringomyelia (viz., an anæsthesia of cutaneous sensibility of segmental type (affecting the 1st and 2nd sacral segments, the 5th lumbar segment, and partly the 4th lumbar segment), the typical dissociation of the anæsthesia, less markedly developed in so far that the area of impaired sensibility to touch is only slightly smaller than that of hypalgesia and thermohypæsthesia, trophic changes on the right foot (spontaneous ulcer of many years' standing and only temporarily healed), tendon reflexes absent or diminished, atrophy of muscles, with a slight degree of paresis.

We can, however, definitely exclude syringomyelia. Although this affection not infrequently runs a very chronic course, even extending over several decades, it is nevertheless a progressive disease. Before diagnosing a syringomyelia, we must have ascertained that the history of the illness shows progression of the symptoms. Exceptions to this rule can only be afforded by cases in the first stage of the disease, and there can be no question of this here, in view of the fifteen years' duration. The course of the illness in this case is quite the reverse; the symptoms began quite suddenly, and subsequently, during the first years at least, they slowly improved, and then remained stationary as a whole. This course in the first place suggests a hæmatomyelia, which has healed under some form of cicatrization or cystic degeneration. It is a well-known fact that hæmatomyelia selects precisely the same parts of the section of the spinal cord as does syringomyelia, *i.e.* mainly the grey matter, especially the posterior cornua and the central grey matter. This fully explains the great correspondence in the symptomatology of the two diseases. The difference in their clinical aspect becomes evident during their course. In syringomyelia the symptoms are progressive, though slowly so; in hæmatomyelia there is an acute onset, and a partial regression of the symptoms during the first stage of the disease, the symptoms subsequently remaining stationary. It is evident that the course of this case corresponds entirely to that of a hæmatomyelia.

There is only one other possible diagnosis—that of a traumatic destruction of the roots which form the sciatic nerve. As already mentioned, the anæsthesia showed no marked degree of dissociation, a fact which might possibly be brought forward as a reason against the assumption of a destruction of the grey matter as the cause of the symptoms and for the assumption of a destruction of the roots themselves. It should be noted, however, that the sense of passive movements of the right leg was also severely impaired, a fact which, assuming the existence of a hæmatomyelia, would point to a lesion of the right posterior column also. In this case the analgesia and the thermoanæsthesia would be caused by destruction of the right posterior horn.

To understand the symptoms in this case, I must again refer to the view which I brought forward some years ago after considering all the clinical and pathological literature as regards the paths of cutaneous sensibility, viz., that tactile impressions are conveyed by two different paths, one passing along with the paths for sensibility to heat and cold in the lateral column, the other passing in the posterior column of the same side in conjunction with the sense of passive movements. Thus we must always expect that as soon as sensibility to pain and temperature as well as to passive movements is impaired, the tactile sense will also be affected. Therefore the sensory disturbances in this case can be easily explained if we assume a traumatic hæmatomyelia as the cause of the symptoms. Lesion of the posterior columns in connection with a traumatic hæmatomyelia occurring without injury to the spine is also known to occur. I need only cite a case lately observed by Winkler and Jochmann.

When, on the other hand, we consider the possibility of tracing the symptoms to a traumatic affection of the roots, we are met with the great difficulty that we have absolutely no positive knowledge of the sensory impairments which were probably present. This is so, at least, with regard to a point of special interest, viz., to what degree the different forms of cutaneous sensibility show an overlapping between the different nerve roots. The well-known investigations by Head and Sherren on "protopathic and epicritic sensibility" go, on the whole, to prove that the overlapping—as far as the peripheral nerves of the extremities are concerned—is more marked as regards sensibility to touch than as regards sensibility to pain. On the other hand, Bergmark and myself have shown by an investigation into the sensory disturbances in herpes zoster that an overlapping—as far as the thoracic spinal ganglia are concerned, which evidently must correspond to the overlapping of the respective roots—exists only to a small extent as regards sensibility to pain, but is present to a considerable degree as regards sensibility to touch. As to the anæsthesia of the extremities following lesion of the roots, Head and Sherren have examined two cases (in which Horsley had cut some roots of the brachial plexus on account of pain), and have been able to demonstrate that the impairment of sensibility to pain was more extensive than that of sensibility to touch. This would go to prove a different arrangement and distribution of the sensory paths in the peripheral nerves on the one hand, and in the roots on the other, but at the same time to show a correspondence between the thoracic nerves (examined by Bergmark and myself) and the roots of the brachial plexus as regards the overlapping of the different forms of cutaneous sensibility.

Observations of a similar kind have been made with regard to the roots of the lower extremities. Müller, for instance, has in a case of fracture of the sacrum with lesion of some sacral roots (Case IV.) found hypæsthesia involving all the cutaneous sensations in the same degree. On the other hand, a number of cases have been observed in which lesion of some of the nerve-roots of the lower extremities has given rise to an anæsthesia which has this constant characteristic, that the analgesia and the thermoanæsthesia, while occupying the same area, both extend somewhat further than do the impairment of sensibility to touch. The following cases are known to me:—One of lesion of the roots following dislocation of the 5th lumbar vertebra (Kahler, quoted from Thorburn); one of spontaneous affection of the cauda of uncertain nature; one of fracture of the 5th lumbar vertebra with damage to the roots (Gierlich); and lastly, one of traumatic injury to the 1st lumbar vertebra with unilateral affection of the roots (Stertz).

The conclusion which we may draw from these four cases coincides with the result of the investigations by Head and Sherren, and by Bergmark and myself, viz., that the overlapping between the different roots is less extensive as regards sensibility to pain and to temperature than as regards sensibility to touch, a fact which should thus apply to all the spinal roots (the 1-4 cervical nerves not having been taken into consideration). I have not studied the question of the absolute extent of overlapping shown by different roots, having restricted myself to that of the relative degree of overlapping shown by the various forms of cutaneous sensibility.

If we go back to the observations made in our case, we find that the extent of anæsthesia shown by the different forms of cutaneous sensibility can, so far as our present knowledge goes, be brought into accordance with the assumption of a traumatic lesion of the roots being the cause of the disease.

Supposing that we are dealing here with a traumatic lesion of the roots, we must assume that the injury to the anterior roots has not been severe, as the paralysis was evidently incomplete, and the motor function was almost entirely recovered in course of time. But with regard to the posterior roots, we must conclude that they have been entirely torn, for we cannot otherwise explain the extensive residuary sensory disturbances. When such a tearing of the roots takes place, however, we must assume a simultaneous hæmorrhage into the membranes of the cord. But in the history of the case there is no mention of the pain which we would expect as the probable result of such a hæmatorachis. It may be possible that this is to be explained by a *complete* tearing of the roots. At first sight it seems remarkable that no regeneration of the posterior roots occurred during so long a period of time, but should the roots have been completely torn, there is no difficulty in understanding the absence of regeneration.

There seems to be no definite reason against the assumption of a traumatic lesion of the roots being the cause of the symptoms in this case. Consequently, it must be left an open question whether bloodless stretching of the sciatic nerve, performed without an anæsthetic, may actually give rise to complete tearing of the roots. I know of no other observation which shows such a possibility.

It may be admitted, however, that the occurrence of a hæmatomyelia after bloodless nerve-stretching is not quite easy to understand, even though we bear in mind that the grey matter is much more fragile than the roots. I can quote a case by Rumpf in which, "bloodless and moderate," stretching of the sciatic nerve in tabes was followed by a hæmorrhage into the membranes of the cord, confirmed by anatomical examination. Pribram also (quoted by Lépine, jun.) has observed "a hæmorrhage into the cord" after forced stretching of both legs on account of a contracture (death from collapse). Taking all the circumstances into account, I am inclined to conclude that a hæmatomyelia is the most likely diagnosis, but, on the other hand, we cannot exclude the possibility of a traumatic lesion of the roots directly due to the stretching. Whichever of these diagnoses we may accept, the case at least forms a good illustration of the dangers attending an "excessive" stretching.

Amongst the physical methods of treatment, I have still to discuss the various *methods of applying heat.* In the first place, the application of poultices and hot fomentations over the gluteal region, and eventually over the nerve lower down the leg, should be mentioned. This is indicated during the acute stage and in severe cases. Personally I have experience of the latter of these methods only, but treatment with hot poultices may have exactly the same effect (Gowers, Edinger, Herter).

Of still greater value, however, is the use of hot baths. Their importance is so universally admitted that I need not dwell on this point. On the whole, the various kinds of hot air or steam baths (so-called Russian steam baths, steam or hot-air cabinets) are, in my opinion, preferable to hot-water baths. I should like to point out that the latter should not be combined with brushing when the symptoms are acute and severe. Further, the various forms of local application of hot dry air, according to the methods of Tallerman and others, are no doubt useful. When the electric current is at hand, this may be very conveniently arranged in the following way:—A cradle having been placed under the bed-clothes, several ordinary electric lamps are fastened to this, and a few extra blankets are put on. In this way a temperature of 80° C. is easily obtained, sometimes increased to 100° C. These electric light baths are very easily arranged, and have lately been used with advantage in various diseases besides sciatica.

It is perhaps advisable to postpone treatment with baths until after the first treatment (the first week or so). I do not, however, hesitate to use baths early provided that the patient can be kept in bed and can have his baths—unless in summer—in the same building, in a hospital, bathing establishment, or sanatorium equipped for the winter season.

Massage baths, which are much in use in Sweden, and are a speciality of our country, deserve special mention. The mud-bath has the most powerful action. Massage is here given over the whole body, in a rather well-heated room, as a rule by two shampooers. For the shampooing "bath-mud" is used. This consists to a great extent of deposits of very small animal skeletons, very rich in silicates. On account of these ingredients the mud irritates the skin somewhat powerfully. After the mud-shampooing a warm douch is given, followed immediately by a warm bath. This kind of bath, which has been for a long time in use at several watering-places in Sweden, is of very great service in chronic rheumatic affections of different kinds. With regard to the more acute cases of sciatica, however, I am very averse to the use of these baths, and would warn my readers against them, as they are, in my opinion, too irritating. In sciatica not in the acute stage, and showing no very severe symptoms, they may, on the other hand, be of great service.

In Sweden another kind of massage bath is frequently used, viz., the "soap-massage" bath. The shampooing is here done with soap all over the body. Otherwise the bath is given in exactly the same manner as the mud-bath. The soap-bath is much less irritating than the mud-bath. Shampooing with soap may also be performed while the patient is in a warm or tepid bath, which makes it still less irritating. Yet I believe the same warning to hold good here also, viz., that it should not be used in acute or severe cases, more especially as massage in these baths is given by persons who obviously cannot have the same training in giving massage as professionals, and can still less have the same medical education.

As regards treatment with electricity, I have been in the habit of using it only in cases which have shown a tendency to become chronic, and here the faradic current seems to be advantageous. When electrical treatment is to be employed in the acute stage of sciatica, experience has shown that the galvanic current should be chosen. For my own part, I have no experience of electrical treatment during the acute stage, and I believe it is the general view of my Swedish colleagues that at this stage massage, especially when combined with careful, gradual nerve-stretching, is decidedly a more effective method of treatment than electricity.

Personally I have no experience of the methods of injection and infiltration of which many modifications have been in use during the last few years, nor of the numerous counter-irritants which were formerly much employed. The reason is simply that the other methods of treatment already described have proved efficacious, and that consequently I have found no need of trying other methods. I do not, however, thus imply any doubt as to their efficacy, although I cannot but think that the injection of chemical solutions into the nerve-trunk or its vicinity is not a very attractive method, especially as experience has proved that the disease may always, or very nearly so, be cured by suitable treatment without the aid of such severe methods. *A priori*, one could hardly expect injections to be entirely without danger. Without entering into details, I may remark that the results so far do not entirely negative this supposition (Oppenheim, Brissaud). These remarks, however, apply in a much less degree to Lange's method of injecting large quantities of a weak Eucain solution (1 per thousand). That there can be no question here of the chemical action of the solution of Eucain is obvious, since several writers, after Lange's communication, obtained the same result by injecting in the same way physiological $NaCl_2$ solution instead of a Eucain solution (Umber and Wolff). Good results have also been obtained from injections of air (Gubb) or oxygen (Massalongo and Danio). Similar methods of treatment were in use long before Lange's communication drew greater attention to them. Grasset, for instance, mentioned in 1894 that he had for a long time treated neuralgias with injections of simple water.

With regard to the mode of action of injections of indifferent substances, such as air, oxygen, $NaCl_2$ solution, water (and to this category Lange's Eucain solution probably belongs), I cannot but think that their action on the nerve trunk is most likely similar to a certain degree to the action determined by nerve-stretching. In both methods we apparently have a kind of neurolysis, or at least a breaking down of adhesions due to a perineuritis.

As to the various kinds of counter-irritants, their marked influence on the course of the disease leaves no room for doubt. Nor can the above-mentioned apprehension be justly advanced against this method, as against the method of injections. When comparing counter-irritants with massage, combined with cautious and gradual nerve-stretching—a method which has now most probably replaced the former methods—I cannot but think that massage and nerve-stretching are the more rational forms of treatment. They aim directly and intentionally at the anatomo-pathological foundation of the disease (which is, I presume, a perineuritis or a neuritis). In any case the explanation of the action of counter-irritants remains completely obscure. Although I have no personal experience of them, I can hardly be wrong in assuming that their action is very variable in different cases, and cannot be estimated with any certainty. To use them seems to me like taking a step in the dark. I readily admit that this is no decisive argument against the use of these methods, had we no others more certain in their action. But it seems to me that massage and nerve-stretching, used in combination with rest in bed, salicylates and suitable baths, as described above, constitute a more reliable method of treatment.

As to the *course of sciatica,* it is surprising to find, when comparing the descriptions in certain text-books, how fundamentally the prognosis differs. Bernhardt takes an especially pessimistic view: "Without doubt recovery is attained in not a small number of cases of sciatica, but in a still greater number improvement or defective recovery only are obtained, a certain amount of stiffness and a tendency to the recurrence of pain (*Schmerzhaftigkeit*) in the leg being observed, especially after exertion. If the disease be the consequence of inflammation of the nerve, a real paralysis, or at least a paresis of certain muscles, may remain."

Eichhorst also takes a pessimistic standpoint: "The course of sciatica is seldom complete in two to eight weeks. Much more frequently it is a question of a chronic disease. Cases are known of more than thirty years' duration." Edinger briefly mentions that very severe cases lasting over decades are known.

The opinion of most authors, however, differs from this. Oppenheim says: "Sciatica in many cases has a favourable and speedy course, and ends in a few weeks or months in perfect recovery. But in other cases the disease may prove to be very obstinate, lasting for a year or more, then showing various changes, and, even after recovery, leaving a great tendency to relapse. . . . If the patient can from the very first do what is necessary for the recovery of health, and especially if he can spare himself exertion, there is every reason to expect a rapid recovery. The prognosis is unfavourable in old cases, in senility, and in those cases in which the cause of the disease is inaccessible to treatment."

Eulenburg's statement is similar: "The prognosis in sciatica is, with suitable treatment, more favourable on the whole than in most other neuralgias. In recent cases of perineuritis without any considerable degeneration, especially in those due to slighter mechanical or atmospheric influences, perfect health may as a rule be looked for, often in a surprisingly short time. But even more severe and long-standing cases may very often be brought to perfect recovery under the influence of intelligent and persevering treatment, a considerable tendency to relapse often remaining however. And after the disappearance of the neuralgia proper there frequently remain for some time troublesome paræsthesiæ, such as a feeling of numbness or tingling, and of weakness and tiredness of the leg after slight exertion."

Strümpell lays stress upon the ultimate favourable issue generally obtained: "The duration of sciatica is seldom less than a few weeks. In many cases it takes months and even years before the pain completely ceases, and the use of the leg becomes perfectly normal. In this respect the course often shows variations. The final issue of a simple sciatica (not due to any constitutional disease) is generally favourable. It is worth notice, however, that the affection has a strong tendency to relapse."

Moritz' opinion is to the same effect: "Provided there be no malignant cause, tumour of the pelvis, disease of the spinal column, etc., the prognosis is generally quite favourable, even though the course of the disease seldom lasts less than a few weeks, often lasts months and even longer, and has a tendency to relapse."

Anglo-Saxon authors have an even still more favourable opinion. Herter, for instance, says: "As regards the ultimate disappearance of pain and the restoration of the function of the nerve, the prognosis of primary sciatic neuritis is good in every case. The duration of the symptoms is extremely variable, lasting in some cases for a few weeks only, in others for many months or a year. Relapses are common in severe cases, and may prolong the period of suffering to one or two years. In general, the more acute and severe the symptoms, the longer the duration of the period in which there is pain. Most cases last for several months. It is a good practical point to remember that in cases where the nerve-tenderness is such that the patient cannot get about the duration of the trouble will be several months at least."

Hammond estimates the ordinary duration of the affection to be about two to three months.

Gowers gives the following account of the course and duration: "The duration and the severity of the affection are extremely variable. They depend on its intensity, and on the amount of rest given the limb in the early stage, and on the constitutional state of the patient. The inflammation may be trifling in a degree, causing pain on movement only, which may pass away in the course of a few weeks. On the other hand, the spontaneous pain may be so continuous and intense, that sleep can be obtained only by the help of narcotics, and the disease may continue for many months, and even for a year. In most cases that last for more than a year there is partial recovery and relapse." . . . "The prognosis in sciatica, not secondary to disease outside the nerve, is good, but is very uncertain as regards severity and duration. As a general rule, these features are proportioned, but both are influenced by the practicability of adequate rest. Irritating exertion may lengthen the duration of the disease by many months, and indeed relapse may follow each recovery for one or two years."

It may finally be of interest to mention that Valleix notes that he has never seen the affection last for more than nine months.

It is thus apparent to how great an extent opinions differ with regard to the prognosis of the disease. For my own part I must decidedly take the same standpoint as that expressed by Gowers, namely, that primary sciatica—leaving out secondary cases, the prognosis of which is determined by the primary affection—is a disease which may, with certainty, be expected to end in recovery. Very often it lasts for months. On this point all writers, without exception, agree. With regard to the duration, I am also in so far in agreement with Gowers, that as a rule it does not extend beyond a year, except in those cases where distinct remissions succeeded by relapses occur. From this it will be seen that I cannot accept the opinion expressed by some German writers of text-books that the affection is often chronic, lasting for years, at least not if treated in a reasonable way.

In order to get an estimation of the duration of the disease as influenced by the treatment here in use, I have made a summary of all cases of sciatica treated by me at the Medical Clinic during 1905-1908. At the outset, however, I may remark that no case of the *very severest* forms of sciatica occurred during that time. Fifteen cases, discharged as cured, and which were treated with massage amongst other things, were on an average thirty-seven days in the ward. Further, there were eleven cases, discharged as cured, which were not treated with massage; they were on an average nineteen days in hospital. This at first sight seems a rather striking difference, but it is explained by the fact that all pronounced cases of sciatica were, as a rule, treated with massage, the others having shown only slighter symptoms. Besides these, seven cases were discharged as merely improved. The conclusion should not be drawn, however, that these cases were not susceptible to treatment, and were thus chronic cases, as they were on an average treated for thirty-one days only. Their discharge before recovery was due either to want of room or to their own desire. Finally, we must point out that though no case belonging to the severest form occurred in the Clinic during these years, we have had many with severe symptoms. Not a few of them showed marked signs of "lost function," such as absence of the Achilles-tendon reflex or atrophy of the muscles of the leg. On the other hand, it is true that the term "cured" at the time of discharge may perhaps not have been fully justified in every case; some, perhaps, ought to have been classified as "considerably improved," owing to the very slow disappearance of the last remaining symptoms. It is very difficult to fix exactly the time at which a patient may be regarded as "cured" of sciatica.

I stated above that primary sciatica is not a chronic affection, that an attack of sciatica properly treated does not probably last more than a year, but that on the other hand the history of the illness may, owing to relapses, extend over a longer period, several years in some instances. Sciatica may be called a chronic disease to this extent only, that certain slighter symptoms may remain even for some years. These symptoms are, as a rule, occasional pain in the leg, pricking along the course of the nerve, possibly paræsthesia also in the toes, a slight relative weakness of the leg, a certain degree of stiffness of the hip when the knee is kept straight (for example, on bending forward when standing upright). These symptoms, which, as a rule, are only now and then present, cannot, however, justly be called sciatica (considering the characteristic picture), but are rather to be considered as slight residuary symptoms. As an illustration the following history may be given:—

CASE 2.—J. A., born in 1848, merchant from L. In the autumn of 1900 patient had severe left-sided sciatica. Had to take to bed in December. I was consulted in February 1901, while he was still in bed. The muscles of the leg were flabby and wasted; symptoms were otherwise typical of severe sciatica. In accordance with my advice, patient was allowed to get up, but was otherwise treated in the usual way with baths, massage, etc. He improved greatly during the spring. During the summer of 1901 I saw him again. He was slightly sensitive to pressure along the sciatic nerve. The left leg was 2 cm. smaller in circumference. Otherwise he complained chiefly of pain in the left leg after having walked a little, and of soon growing tired when walking. He was treated for a few weeks with mud-baths, massage, and faradisation, after which he improved. In February 1906 he had a return of sciatica in the same leg (he says that during the intervening years he had never been quite free from symptoms), and had to take to bed for two or three months. He improved later under treatment with baths.

In June 1908 he presented the following symptoms:—He does not complain of any pain, but of a feeling of stiffness in the leg when the weather is bad, and of a sensation of dragging in the lower extremity, and as of having a ring fastened round the leg. Lesègue's symptom is not present. No tenderness over the sciatic nerve nor over the gluteal region. Achilles-tendon reflex present, equal on both sides. In walking, patient drags, though but slightly, the point of the left foot, which, during the forward movement of the leg, hangs a little lower down than the right one. Power of extensors of the left ankle-joint is somewhat less than on the right side, but as regards plantar flexion no difference is noticeable. The muscles of the left leg are somewhat thinner than on the right side, but of normal consistency.

Patient was treated for some weeks with the faradic current and soap-massage baths. The motor disturbances in the left foot improved somewhat.

This case seems to me to be a typical illustration of the nature and degree of the residuary symptoms which may remain after a severe sciatica, which in this case had relapsed. To call this sciatica and classify the case as a chronic sciatica seems to me quite unjustifiable. On the other hand, it is by no means impossible that such residuary symptoms may remain permanently after the severest forms of sciatica. The writer of this paper ten years ago had a very painful and severe attack of sciatica, which gave rise amongst other complications to a distinct paresis of the leg. The duration of the attack, however, as far as the acute stage was concerned, was not very long. Although in every other respect I am, and have been for years, perfectly recovered, I periodically at long intervals feel pain along the nerve-trunk, not severe or troublesome, and coming on especially when the body is in certain positions, such as bending far forwards with the knees straight.

Among the cases of sciatica which I have observed and followed—many more than a hundred—there is only one which has seemed really like a chronic case.

CASE 3.—A., 42 years of age, a widow, who for the last two or three years has complained of symptoms resembling sciatica in both legs, mostly in the left. The symptoms have varied in intensity, though they have at no time disappeared, and are always said by patient to be very troublesome. She has, however, during the six years I have observed her, constantly shown varying but distinct symptoms of hysteria: hysterical fits with fainting, partly with symptoms of neurosis of the heart; hysterical stigmata, left-sided, slight paresis. In the region of the sciatic nerve there is no loss of function of any kind; Lasègue's symptom is but slightly indicated in the left leg. Patient has never limped, but a general feeling of fatigue is a very marked symptom. There is now some tenderness over the left sciatic nerve and over the gluteal muscles of both sides. On the other hand, she shows no typical stigmata on the lower extremities, nor in the region of the hips, neither cutaneous hyperæsthesiæ nor any kind of anæsthesiæ. (Since the above was written, a further examination has revealed new symptoms—weakness of the left leg and hypalgesia of the left knee.)

In a case like this it seems to me impossible to determine with certainty whether the diagnosis of sciatica is really justified or not. At all events the symptoms are but slightly prominent, and however severe the pain might be, it must unhesitatingly be explained chiefly as a manifestation of the hysteria. When sciatica appears in a patient suffering from a more marked form of hysteria, it easily happens that residuary symptoms of sciatica, slight in themselves, may, on account of the general psychical condition of the patient, give rise to pain which is felt as more or less marked or severe, and which may be of long duration. This unfavourable influence of hysteria on the prognosis of sciatica, as of other neuralgias, is a well-known fact.

On examining cases which present themselves as chronic sciatica, I think it of the greatest importance to *examine carefully the condition of the hip-joint.* I have found that a "*morbus coxæ senilis*" *in its initial stage* is the condition which may most easily lead to diagnosis of the "chronic sciatica." This is the more easy, inasmuch as the symptoms of sciatica may be associated with those of chronic deforming processes in the hip-joint, even in their earliest stages of development. As these forms of hip-joint disease are chronic, do not diminish in the majority of cases at least, and show a decided and usually constant tendency to grow worse, it is evident that in morbus coxæ senilis complicated with sciatica, we must in the first instance give our attention to the former affection, and regard it as being much the more important of the two.

It seems very probable that in such cases sciatica should be regarded as a secondary affection. It accords well with this that the symptoms of sciatica often remain and become chronic in these cases, whereas uncomplicated sciatica, in my experience and that of certain other writers, is an affection which, when suitably treated, does not become chronic. Examination of the literature in which chronic cases of sciatica are quoted, shows that in a number of these cases a chronic, deforming process of the hip-joint was present. Levison, for instance, found this in one of two chronic cases (the other being of intermittent character), and Pers, in four cases out of eight, with a duration of five years longer.

The importance of carefully observing the condition of the hip-joint is pointed out by many writers. Gowers remarks that "senile rheumatic inflammation of the hip-joint" is a common cause of sciatica, and that consequently it is of the greatest importance always to examine the condition of the hip-joint. Strümpell notes as a diagnosing sign between coxitis and sciatica (besides the symptom of Lasègue) that abduction is painful in coxitis but not in sciatica. Hoffa also emphasises strongly the importance of examining the hip-joint with regard to abduction in all cases with symptoms of sciatica in order to discover early cases of morbus coxæ senilis. Eichhorst again points out that rotation of the leg is painful in coxitis but not in sciatica. Christiansen also draws attention to this, while specially indicating that affection of the hip-joint shows itself in the first place by a restriction in its abduction and outward rotation—flexion of the joint still being of the normal extent. (Christiansen proposes that mobility of the joint be tested in this way: the heel of the leg to be examined is placed on the other knee, after which, the pelvis being fixed, the knee of the leg under examination is pressed as far downwards and outwards as possible. Christiansen says that outward rotation is thus tested; evidently the power of abduction is also tested by this movement.) And, lastly, Schultze, in his paper given at the Congress for Internal Medicine, 1907, points out that the differential diagnosis of sciatica is important, especially in the initial stage of chronic inflammation of the hip-joint.

Although the importance of the differential diagnosis of sciatica from chronic inflammation of the hip-joint is by no means neglected in the literature, experience shows that in practice sufficient attention is not paid to this point. To what an extent examination for morbus coxæ senilis may be neglected, is proved by the fact that of fifty-eight cases of this kind which Stempel had the opportunity of observing, only four had been correctly diagnosed, seventeen being sent to him with the diagnosis of sciatica. Later, Preiser, also from the surgical side, advocated the necessity of carefully examining the mobility of the hip-joint in every case presenting symptoms of sciatica, thus protecting oneself against overlooking a commencing morbus coxæ senilis. I have also received, sometimes from distinguished colleagues, not a small number of cases of "chronic sciatica" which, on closer examination, proved to be morbus coxæ senilis in an early stage of development. This was so in the following case:—

CASE 4.—Miss A. N., 61 years of age, from F. Patient states that she has suffered from the present symptoms since 1903. These she says have gradually increased, though varying in severity.

Condition on June 6, 1906.—Patient complains of pains in the left hip, which extend down to the knee, sometimes even down into the leg. The pain is most severe after she has been walking for a time. She has limped for a year and a half. On examination, flexion as well as inward rotation of the left hip-joint can be passively performed to an absolutely normal extent, but outward rotation of the left hip-joint is abolished, and abduction greatly limited. There is tenderness to pressure anteriorily over the head of the femur, and to a knock on the great trochanter, and tenderness also over the gluteus medius. There are symptoms of a very slight mitral stenosis.

Patient was treated with mud-baths and powerful massage movements of the hip-joint. On June 12th of the same year there was much subjective improvement. Patient now limped only at times; outward rotation of the left hip-joint was improved, but abduction was still obviously limited.

In June 1907 I saw patient again. She thought the leg was "easier" than the year before. She had just had a herpes zoster on the trunk and left arm. Her general condition was still somewhat low and did not permit of more energetic treatment. The condition of the hip-joint was about the same as before.

During September 1907 patient was again treated with powerful massage movements of the hip-joint. During the winter, however, the hip-joint grew worse, and it troubled her very much during April 1908. During May 1908 treatment with passive movements was again followed by subjective improvement. Mr Lindell, M.K., director of gymnastics, who gave this treatment, kindly informs me that at the end of the last period of treatment, flexion as well as extension of the hip-joint took place to a normal extent, while abduction was considerably, and outward rotation moderately, limited, both, however, possibly to a greater degree than previously.

I saw patient again during the summer of 1908. She was not suffering greatly from her hip-disease, and the limp was very slight. I made no detailed notes as regards the mobility of the hip-joint.

This history is chiefly of interest as an illustration of a morbus coxæ senilis of five years' duration, which has not progressed during the last two years, but has, on the contrary, somewhat improved under proper treatment. It is further worthy of notice that after five years the disease has not developed further than to cause a slight limp, flexion of the joint taking place to the normal extent.

Here is another case which is of interest in this connection :—

CASE 5.—N. M., born in 1854, peasant from O. Patient says he has suffered from pain in the right hip since about 1897. During the first years the pain subsided periodically, but later this has not been the case. Pain is most severe on starting to walk, especially on uneven ground, when he is in danger of taking a false step. He walks with a stick and limps considerably. The disease has been regarded by the doctors as sciatica.

Condition on June 27, 1907.—All movements of the right hip are limited. Flexion is only moderately restricted; outward rotation and abduction are greatly so; inward rotation only to a moderate degree. There is tenderness to pressure over the head of the femur in the inguinal region, but not over the sciatic nerve, nor, at least to any marked degree, over the gluteal region.

Patient was treated with mud baths, Roman baths, powerful passive movements, and with injections of fibrolysin. On July 26th of the same year it was noted that the mobility of the hip-joint had considerably improved, and that abduction especially had greatly increased.

In June 1908 I saw patient again. He stated that his condition has remained almost unchanged since the end of treatment the previous summer, though perhaps slightly improved. He has continued, as well as he could at home, the systematic movements, especially that of bending the knees while standing on the toes, trying to get as low down as possible. Examination of the hip-joint now showed that flexion was but slightly restricted, and that inward rotation is almost normal. Outward rotation and abduction are still, however, considerably limited.

Patient was treated in the same manner as the preceding year. The hip-joint improved still further, so that on July 21st mobility of the joint was only slightly reduced. Patient could now walk, at least on level ground, without limping, and did not require the aid of a stick.

This case shows in a surprising manner to what a degree improvement may be obtained in a case which had already lasted eleven years. To what extent the fibrolysin treatment was a contributing factor I cannot say for certain. I have often seen considerable improvement of morbus coxæ senilis under treatment by very powerful passive movements, but I cannot remember ever having observed another case in which improvement under treatment reached so high a degree, and it therefore seems not improbable that the fibrolysin had, in some measure at least, contributed to the result. The following case may be briefly mentioned :—

CASE 6.—E. J., merchant's wife, 53 years of age, from V. Patient had complained for the last five or six years of pain in the right hip. She limps. Flexion can be performed to a normal extent. Outward rotation is abolished. Abduction considerably diminished. Patient also complains of stiffness in the finger-joints coming on periodically.

This, as well as Case 5, serves to illustrate the fact that a morbus coxæ senilis, although not treated in any special way, may exist for years without restricting the mobility of the joint to any very great degree, and especially without limiting the extent of flexion.

Another case may be related, which has been observed at the Medical Out-Patient Department of the University by Dr Bergmark, and kindly placed by him at my disposal.

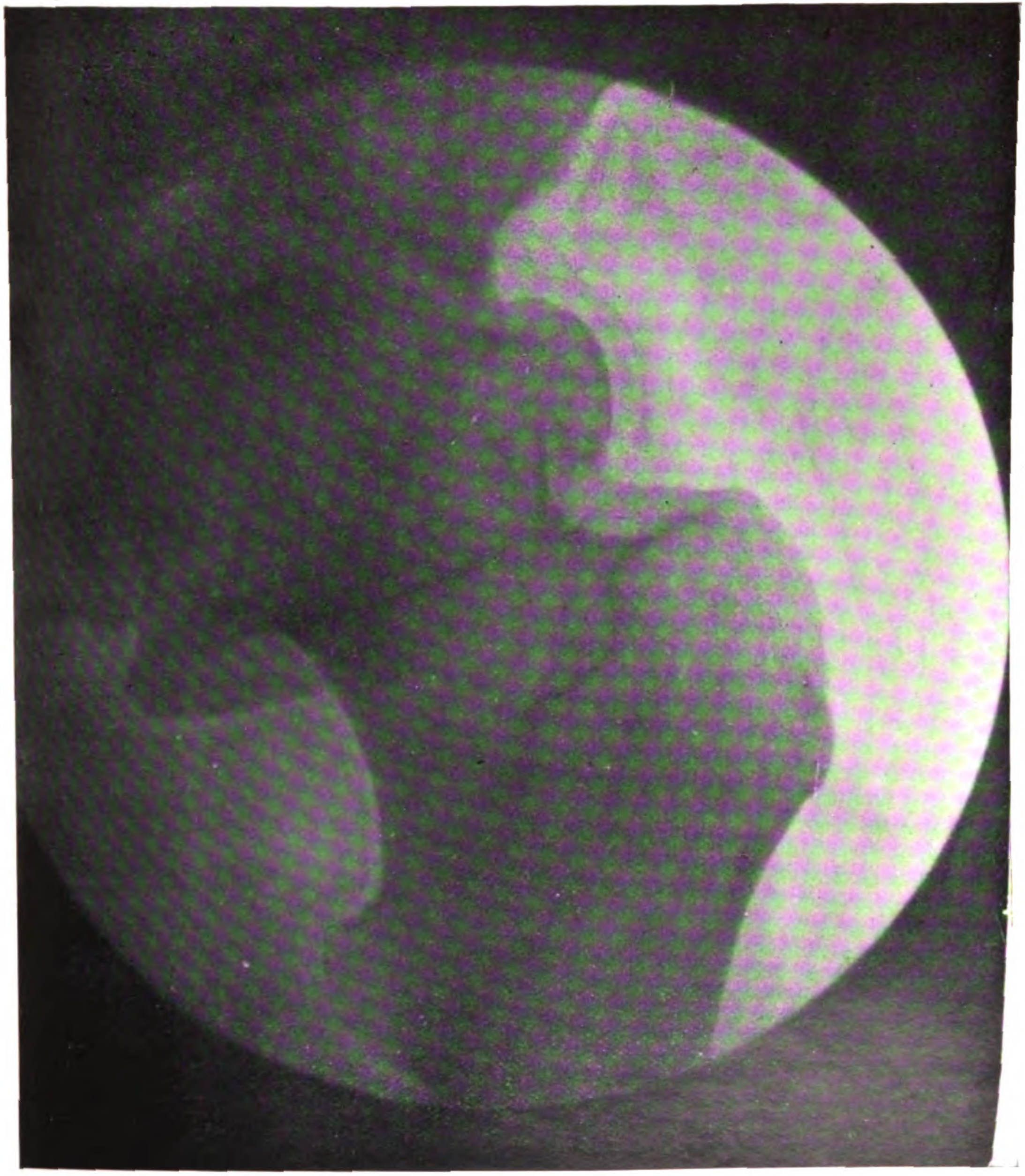
CASE 7.—S. P., a woman of 25 years of age, from A. After an injury ten years ago, patient occasionally suffered from pain in the right hip and thigh. This was troublesome on walking. Patient does not limp, however. On bending sideways she felt pain. She was able to walk immediately after the injury.

Examination of the hip-joint shows that flexion and adduction is normal, while outward rotation and abduction are limited. Lasègue's symptom is not present. The hip-joint is tender to pressure anteriorily. A Röntgen photograph shows a ring of new-formed bone round the edge of the head of the femur in the immediate proximity to the edge of the acetabulum. It is rather high, irregularly shaped, and narrower where it joins the edge of the head than further out. The *articulating surfaces* of the acetabulum and the head show no definite alterations of form.

The X-ray picture shows that we are dealing with a deforming process. After the injury ten years ago patient is said never to have been unable to walk ; consequently there can have been no fracture or separation of the epiphysis, and the mass of new-formed bone present ten years after the injury shows that we have to do with a gradually progressive deforming process.

Considering the age of the patient, one is in doubt whether to class the case with ordinary morbus coxæ senilis. It shows,

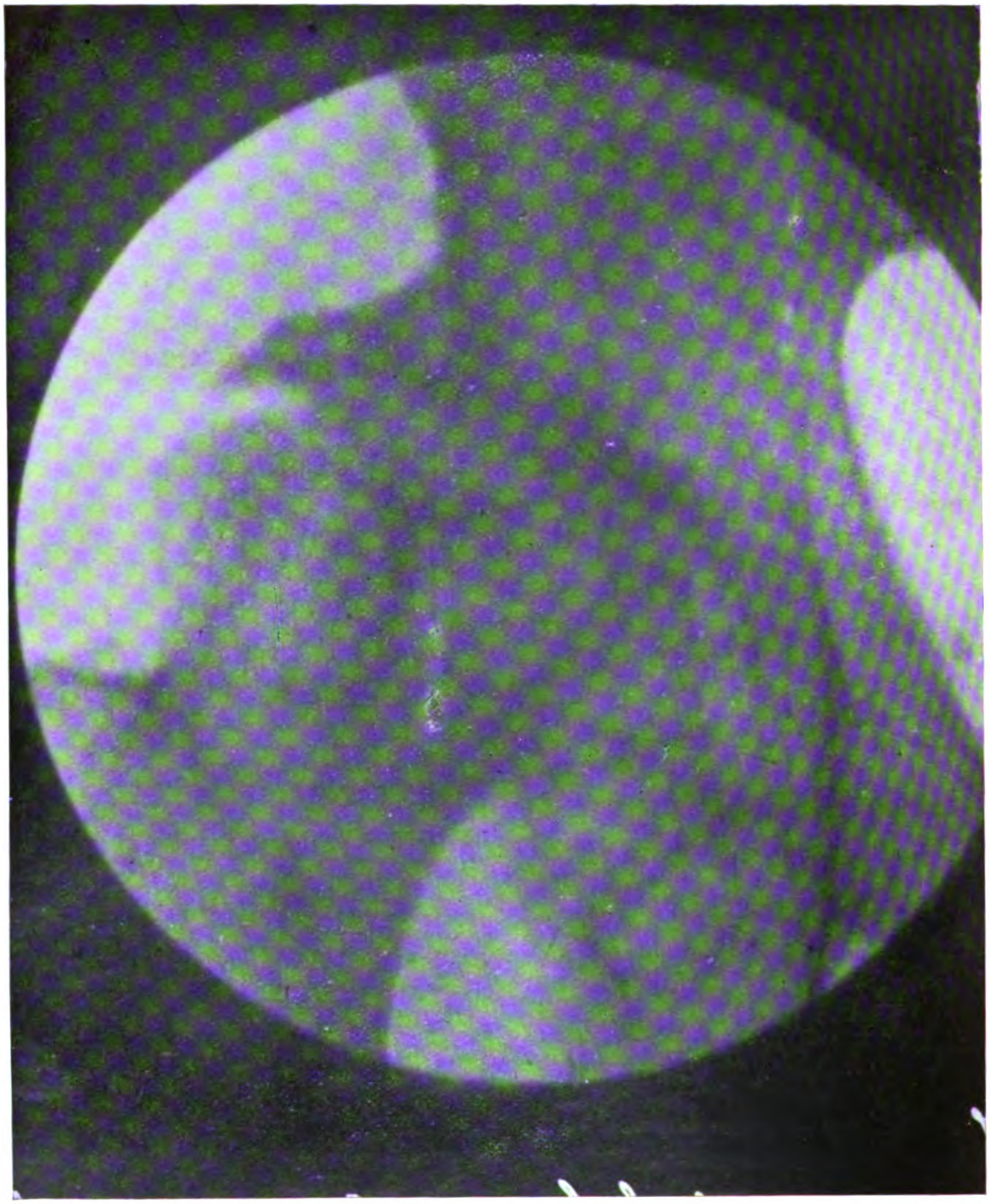
PLATE 5.



CASE VII

To illustrate Dr Petrén's Paper.

PLATE 7.



CASE VIII.

To illustrate Dr Petrén's Paper.

however, that a deforming process of the hip-joint may exist for many years without giving rise to any great restriction of the mobility of the joint, especially as regards the extent of flexion.

As I conclude this paper, the following case comes under my observation :—

CASE 8.—A. J., workman, aged 60, from K., admitted to the Medical Clinic on December 30, 1908. Twenty-two years ago patient fell from a considerable height (3-3½ m.) on to his right side, his left being struck by a heavy plank. During the next few days he was able to walk without any support. From this time there has been, he says, a feeling of uneasiness ("a burning sensation") and a certain degree of stiffness of the left hip. These troubles, however, seem only to have existed periodically, and the account of them is vague and uncertain. Patient seems to have limped only since the spring of 1908.

Examination on January 1909.—Flexion of the left hip-joint can be carried out barely to a right angle; rotation inward is but moderately restricted, but outward rotation is almost entirely abolished. Abduction and adduction are present only to a very small degree. Patient complains of pain, which to a great extent he localises in the leg. There is tenderness partly over the hip-joint when pressure is exerted from in front, partly over the gluteus medius, but not over the sciatic nerve. On admission patient limped, but after a short stay in hospital, where he was treated with rest in bed, salicylates and warm baths, there has been so much improvement in the spontaneous pain and in the gait that he no longer limps. He is able to walk quickly and with long steps. The X-ray plates show a considerable degree of roughness of the articulating surfaces of the head of the femur, as well as of the whole of the acetabulum.

This case is another illustration of how long the deforming process may be going on in a hip-joint without leading to very marked restrictions in the functional power of the joint. In this case at least, it seems probable that the disease has lasted since the accident twenty years ago. It also seems remarkable that the patient, in spite of the considerable deformity of the articulating surfaces shown by the X-ray plates, and of the considerable restrictions in the mobility of the joint, was yet able after a short period of rest in hospital (for it does not seem probable that the other constituents of the treatment were of any great account) to walk rapidly and without any sign of limping.

With the support of the case here cited and a number of others which I have observed, I should like to emphasise the fact that morbus coxæ senilis is a disease to be carefully sought for as soon as we have to deal with pain in the hip or in the leg of any duration, even if the limitation in the movement of the hip-joint should not be at once striking. This affection may (and it is probable that it often does) have a long duration, extending over several years, without necessarily causing any very high degree of restriction in the movements of the joint. When examining the hip-joint in such cases it is absolutely necessary not to be contented with examining flexion only. It is equally necessary to remember that a normal hip-joint can be bent not only to an angle of 90°, but usually up to nearly 135° (Poirier), as this may be perfectly normal even though the symptoms of morbus coxæ senilis have existed for several or even many years. I cannot, therefore, agree in this point with Preiser, who considers that flexion will always be limited, even in the early stages. In my opinion the mobility of the hip-joint should be examined in all directions, abduction and adduction as well as inward and outward rotation. Rotation is, I believe, best tested in the following way: the patient being on his back, the hip and knee-joints are flexed each to about a right angle; the rotation of the hip-joint is then tested by lateral movements of the leg in the horizontal plane, without altering the position of the knee. The position thus attained by the leg plainly indicates the degree of rotation possible. Stempel has suggested that rotation may be tested with the knee bent. In order to test abduction without rotation it is probably most convenient to have the patient sitting on the edge of a chair. There is, of course, nothing to prevent adduction being investigated when the patient is on his back, but care should then be taken that there is no outward rotation of the joint at the same time. The methods here indicated have also this advantage that the extent of abduction and rotation are investigated with the hip-joint flexed, this being the position of the joint in which these movements can be carried out to a greater extent than in the extended position (Poirier). It is evidently an advantage to test the extent of a movement under those circumstances which normally permit of the greatest amount of movement.

That the mobility of the other hip-joint has to be controlled goes without saying. As regards the influence of age on mobility of the hip-joint, it seems to me remarkable that flexion, which nominally can be performed to such a great extent, is not as a rule restricted, at least not to any marked degree. With regard to abduction, on the other hand, I have not infrequently found some reduction in its normal range, which is the case also with regard to rotation, though to a somewhat higher degree, even in cases where other modes of examination or continued observation have failed to give any support for the supposition of a deforming process or other disease of the hip-joint. Here, evidently, it is a question of a symmetrical restriction of the mobility of the joints. As is well known, morbus coxæ senilis not infrequently occurs as a bilateral disease, though as a rule it is more marked on one side than on the other. In diagnosing a bilateral trouble of this kind, attention must be paid to the normal limitation of mobility of the joint in old age (that is to say, in the real senile period).

As to the *differential diagnosis between sciatica and morbus coxæ senilis*, it may be simple enough. In the former case we have Lasègue's sign with normal mobility of the hip-joint during flexion of the knee; in the latter the extent of movement of the hip-joint is limited to a greater or less degree. As a rule the diagnosis between these two affections may be made in accordance with the above rule; it must, however, be remembered that a severe sciatica undoubtedly causes pain on larger movements of the hip-joint, although the knee is kept perfectly flexed. This circumstance has been completely overlooked by William Bruce, who, on this account, assumes the presence of coxitis in every case of sciatica in which movement of the hip-joint causes pain. On account of this erroneous assumption, the author has come to the conclusion, obviously absurd, that all cases of sciatica are due to coxitis. In slighter cases of sciatica this does not occur. The degree of limitation in the extent of movement of the hip-joint, the knee being flexed, which may be due to sciatica, thus stands in a definite relation to the intensity of the sciatica. If this fact be taken into consideration, the differential diagnosis between sciatica and morbus coxæ senilis should hardly offer any difficulty—that is to say, so long as they are uncomplicated.

The circumstances that both affections are so often present at the same time may, however, give rise to difficulty in diagnosis. It is not rare in my experience to find that in morbus coxæ senilis tenderness to pressure is present over the usual point of pressure upon the gluteus medius, described above, but not over the nerve-trunk. The question whether in such cases we ought to speak of sciatica or not becomes optional—at least so far as our present knowledge goes.

The nature of the spontaneous pain cannot be a definite indication. As is well known, it does not usually extend further than the knee in affections of the hip, but it may extend right down into the leg, without enabling us to be quite certain as to the diagnosis of sciatica. The latter fact is emphasised by both Hoffa and Stempel.

The only way in which to decide whether sciatica is present or not is to test for Lasègue's sign—provided the restriction of the mobility of the hip-joint does not render this impossible.

Granting that the diagnosis of sciatica associated with morbus coxæ senilis may cause some difficulty, it must be remembered that the practical importance of such a diagnosis is not very great. It is ever so much more important not to interpret a commencing morbus coxæ senilis wrongly as a chronic sciatica, as effective treatment of the hip-disease (see further on) would be neglected through this mistake. If there be any suspicion of sciatica in a case of morbus coxæ senilis, or merely signs of myositis in the gluteal region, we should employ massage in the ordinary manner. Even if this might sometimes be given on account of a wrong diagnosis, it is evident that no danger would result. Pers has proposed to use neurolysis even in sciatica complicating morbus coxæ senilis. Should this opinion be supported by others, then the diagnosis of sciatica, combined with morbus coxæ senilis, would be of greater practical importance than it is at present. I cannot, however, find that the evidence on this point has hitherto tended to prove that the operation is indicated under these circumstances.

If we return to the differential diagnosis between the two affections, when not occurring simultaneously, closer analysis of the nature of the pain will aid the diagnosis. It is often characteristic of the pain of morbus coxæ senilis that it is most severe when the patient starts walking, and becomes less severe as he continues to walk. This is not usually the case in sciatica. Patients often clearly state that it is the stepping on the foot—that is, the transferring of the weight of the body on to the foot, that causes the pain. This is not the case in sciatica where, at least in the more severe cases, every phase of movement of the leg causes pain.

Sometimes in morbus coxæ senilis, it is stated that stepping on uneven ground, or, for instance, on a stone which slips away, is painful in a very high degree. This phenomenon is not to be expected in the same characteristic way in sciatica. As regards tenderness to pressure of the hip-joint proper, the importance of this symptom for the diagnosis of morbus coxæ senilis is so universally acknowledged and observed that it need not be dwelt upon here.

Finally, with regard to the differential diagnosis, the importance of the course of the two affections deserves attention. Morbus coxæ senilis shows as a rule a steadily progressive course. This must not be taken to mean that the progress of the symptoms is uniform; on the contrary, it is most often irregular and sometimes even periodical, but it is still progressive in the sense that the symptoms do not subside (spontaneously at least), but as time passes on they increase. This is especially so as regards the functional limitation of the joint, the pain being more apt to show remissions. This contrasts sharply with the course of sciatica, especially of those cases in which there is a history of years' duration. Sciatica is a disease in which the symptoms as a rule reach their maximal intensity during the course of a couple of weeks or so, and nearly always during a period of a couple of months. If the patient does not get suitable treatment, the symptoms may undoubtedly remain at their height for a considerable time, a couple of months or so, but after that an abatement of the symptoms may be looked for. When the affection lasts for a longer time, it does so only as before mentioned, with distinctly pronounced remissions in its course.

Finally, a few words about the *treatment of morbus coxæ senilis.* All the different forms of baths mentioned here as useful in sciatica may be employed. Mud-baths may as a rule be used with advantage, provided the general condition of the patient does not counter-indicate this trying form of bath. Preiser recommends very hot sitz-baths (the patient sitting in the bath with the pelvis and thighs only in the water) of half an hour's duration, two or three times a day. Of this I have no personal experience, but the suggestion seems worthy of attention. One must not, however, expect too much from this bath treatment *per se.* The same holds good as regards massage. I do not think that any *great* effect can be attained by this treatment, partly because the hip-joint is difficult to reach by massage, and partly because the anatomical changes are in this case of such a nature that no great result can be expected from massage. The most important method of treatment is probably, therefore, *energetic passive movements of the hip-joint.* The movements should be made in all directions, sufficient force being used to produce distinct pain. One must, however, be careful not to cause pain which will remain for a long time after the séance, or an increase of the painful symptoms during the intervals between each séance. There is, however, one movement against the use of which I ought to warn my readers. That is circumduction, *i.e.* the movement in which the foot describes a circle. This movement may be extremely painful to the patient, and can hardly be of any use, as one cannot "grind" the surfaces smooth again. In giving passive movements the intention is to enlarge the range of movement of the joint. Its functional capacity is increased, the gait is improved, and the pain is usually diminished. The range of movement is enlarged by energetic movements along the different axes as far as this can be done at the expenditure of a certain amount of force, and by methodical and frequent repetition of these movements. If we try to attain the same result by means of circumduction, it would, in any case, be possible only by exposing the patient to much greater pain.

It is natural that the advantage of the treatment here indicated should become apparent chiefly in those cases in which the deforming process has not advanced too far. If the hip-joint be nearly ankylosed, it is evident that but little can be done. We are sometimes warned against all treatment by movement in this affection (Mellbye), as it might make matters worse. I am convinced that this experience has been based upon advanced cases, and I do not deny that in such cases it may sometimes be wise to abstain from movement-treatment if it might tend to aggravate the symptoms. But if this conclusion were applied to *all* cases of morbus coxæ senilis, I feel certain that it could only be from making the mistake, which I have found to be not uncommon in practice, of recognising or admitting as morbus coxæ senilis only such cases as are already very near the stage of ankylosis.

The less the limitation of movement the greater the prospect of gaining good from the treatment. On this account, knowledge of the fact I have here pointed out is of special importance, viz., that at the commencement of the disease there is often a prolonged stage during which flexion can be performed to a perfectly normal extent, the restriction having affected only the other movements. In such cases I consider that with energetic treatment the chances of improvement, and even of very great improvement, are very good. I have in every case which has not advanced too near the stage of ankylosis prescribed powerful passive movements. I have had the opportunity of gaining experience as to the effect of this treatment in a considerable number of cases, and have often witnessed considerable improvement. Treatment with powerful passive movements in this affection is also recommended by Christiansen. Preiser, likewise, highly recommends it. He thinks that by this method it will be possible in every case to prevent the disease from progressing, in most cases to improve the patient's condition, and in slight cases to cure them completely. This, however, is, in my opinion, too optimistic a view. It may be possible that in cases where the disease is not too far advanced, fibrolysin treatment will show itself to be an effective agent, but at present my experience is too small to enable me to express any decided opinion on this point.

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Abstracts

PHYSIOLOGY.

THE CRITICAL GREY. (**Ueber das kritische Grau.**) Révész, (250) *Ztschr. f Sinnesphysiol.*, Abt. ii., Bd. 43, Heft 5-6, 1909, S. 345.

Coloured light falling upon the retina produces stimuli of an achromatic as well as of a chromatic nature. While the latter are caused by the hue alone, the former are caused by the specific white- or black-value of the colour itself, together with the white-value of the illumination under which the colour is seen. Thus the perception of the brightness of a colour is the result of the combination of the white- or black-stimulus of the colour with the white-stimulus of the illumination.

If this combination does not attain neutralisation, then either the white- or the black-stimulus predominates, and in either case the intensity of the colour is reduced and it appears less saturated. If, however, the illumination is so arranged as to produce this neutralisation, the specific colour value reaches its maximum, the chromatic stimuli having now their highest, the achromatic stimuli their lowest, values.

The subjective impression conditioned by a minimal value for the sum of the achromatic stimuli is Révész's *critical grey.*

The author describes his investigations as to whether the brightness-value of a colour at its point of minimal perceivable intensity (*Farbenschwelle*) is identical with the critical grey, and secondly, whether the minimal perceivable intensity, in the case of various colours, is associated with an equal degree of brightness.

Experiments with chromatic tops in a specially prepared room are described and their results tabulated, the following conclusions being drawn :—

1. The minimal perceivable intensity of a colour is always to be found in association with a degree of brightness equal to the critical grey.
2. The brightness of the minimal perceivable intensity of a colour is independent of the nature of the colour—*i.e.* the degrees of brightness which are associated with the smallest perceivable amounts of corresponding colours are equal.
3. The absolute intensity of a colour necessary for its perception increases as the brightness of its contrast ground.

H. M. Traquair.

ON THE COMPREHENSION OF COMPOSITE COLOURS. (Ueber den (251) Begriff der zusammengesetzten Farbe.) PETRONIEVICS, *Ztschr. f. Sinnesphysiol.*, Abt. ii., Bd. 43, Heft 5-6, 1909, S. 364.

IN regard to the relationship between the four primary colours of Hering and the intermediate or bordering colours, as to whether all are simple colours or the latter are composed of the former, Petronievics points out three solutions which have been suggested:

1. The theory of four special primary colours may de denied, and every shade of colour may be regarded as a primary, or as an intermediate colour in Hering's sense.
2. Hering's view may be accepted with the reservation that the intermediate are in no way composed of the primary colours.
3. The third view, with which the author agrees, is that the intermediate colours, both in themselves and as perceived, are composed of the primary colours.

The discussion is limited to colours formed of two components, and, having considered the first two solutions of the problem at length, the author decides against them.

The result of the blending of two components into one colour is not merely the mechanical sum of the components, nor is it a totally new colour. Using the chemical analogy it is neither a mixture nor a union, but an intermediate subjective impression is produced in which neither original component has completely retained or completely lost its specific quality.

In an area of colour of a single hue the individual colour points of which the area is composed are not separately perceived, but as each point is in immediate proximity to another of the same hue without any intervening space, all are subjectively melted together to form a single subjective colour impression.

A single point cannot have two colours at the same time, so that in an area in which two colours are blended, the impression of an intermediate colour is produced by the subjective melting together of immediately approximated points of different hue, as the individual points are in this case also not separately perceived.

Dr Petronievics summarises as follows:—

1. Hering's theory of the four primary colours—yellow, red, blue, and green—may be regarded as firmly established.
2. A primary colour produces a simple impression, an intermediate colour a compound one in which the two components can be distinguished more or less clearly.
3. Intermediate colours are composed of primary colours, and an area of intermediate colour is composed of individual points of the component colours.

4. These points are arranged comparably to the squares on a chessboard, which is the only arrangement which can produce the impression of an intermediate colour.
5. The various shades of an intermediate colour depend upon variations in the colour-intensity of its component primary colour points.

H. M. Traquair.

NEGATIVE "MOTION-AFTER-PICTURES." (Zur Kenntnis der (252) negativen Bewegungsnachbilder.) Kinoshita, *Ztschr. f. Sinnesphysiol.*, Abt. ii., Bd. 43, Heft 5-6, 1909, S. 420.

If a moving object is observed under suitable conditions, and the motion is then stopped, an appearance of motion in the opposite direction is seen.

This subjective phenomenon is the "motion-after-picture" (*Bewegungsnachbild*). Dr Kinoshita refers shortly to the literature of the subject, and records his observations as to the occurrence of this phenomenon when the observed object appears to be at rest, although its retinal image traverses the retina, which occurs when the retina moves in front of the resting object, either by moving the head, the eye being fixed in relation to the head, or by the ordinary movements of the eye, and then compares his results with the phenomenon as produced in the ordinary way by moving object and fixed retina. A roll of white paper marked with black horizontal lines, arranged on two drums placed one above the other with horizontal axes served as the object, while a small ball suspended perpendicularly by a thread in front of the paper acted as fixation point. The thread was connected to a clockwork apparatus so that the fixation point could be moved at a measured rate; the object could also be moved at a measured rate by revolving the drums. In this way after-pictures were obtained under both sets of conditions. The results of experiments with this apparatus are tabulated, and show that the phenomenon in question may be produced in both ways, but is less distinct and enduring when the retina moves and the object rests. Movements of the external ocular muscles and changes in the position of the head modify the after-picture and may inhibit it altogether.

An interesting result is that when one eye was used to observe the object, the other being closed, the phenomenon could be perceived by the second eye alone, the fixing eye being closed immediately the movement of the object ceased.

H. M. Traquair.

THE DURATION OF NEGATIVE "MOTION-AFTER-PICTURES."

(253) **(Ueber die Dauer des negativen Bewegungsnachbildes.)** KINOSHITA, *Ztschr. f. Sinnesphysiol.*, Abt. ii., Bd. 43, Heft 5-6, 1909, S. 434.

IN his second paper Dr Kinoshita estimates the duration of the motion-after-picture under varying circumstances of length of fixation and rapidity of movement of the object. The apparatus used was similar to that already described, the drums being arranged with vertical axes so that the lined paper moved horizontally, while it was observed through a vertical 4 x 6 cm. hole in an intervening screen, a small black-headed pin being erected opposite the centre of the aperture to act as fixation point. The amount of illumination was measured and recorded. Tabulated results are given. The duration of the phenomenon varies directly with the length of fixation and the rapidity of motion of the object, within limits. If, however, the velocity of the object exceeds a certain limit the duration of the after-picture is reduced, probably because the object is now moving too rapidly to make a distinct impression. The duration of the after-picture increases with the brightness of the object up to a certain degree. H. M. TRAQUAIR.

THE VARIOUS PAIN QUALITIES.

(Die verschiedenen Schmerzqualitäten.) (254) SYDNEY ALRUTZ, *Skand. Arch. f. Physiol.*, Bd. 21, H. 4 and 5, 1909, S. 237.

THE author discusses in detail the views of Goldscheider, Thunberg, and others, and records his own experiments on the production of various qualities of pain by chemical and thermal stimulation.

In agreement with Goldscheider and v. Frey, the author considers that the heat and cold spots of the skin do not give rise to pain sensations. When pain is produced by thermal stimulation of the skin, sensations of heat and cold are elicited from the temperature spots, but the pain itself is due to stimulation in addition of a special pain organ. The sensations of pure pain are identical whether elicited by heat or by cold.

From the diversity of the time relations of pain and temperature sensations with chemical stimuli, it is concluded that on the back of the hand at least the pain nerve endings are most superficial; below them lie the endings for cold and those for heat are situated most deeply.

Thunberg believes that as regards dull pain the sensations are brought about by organs more deeply situated than those which give rise to biting pain sensations, and that the dull pain has a lower threshold than the biting. The author's experiments with cold stimuli yield the same results for the two kinds of pain, dull and biting, obtained by this form of stimulation. The dull and biting pain obtained by cold stimuli are regarded as identical with the two forms of pain caused mechanically. Stinging and biting pain differ only in intensity . The former is elicited from one or a few points, the latter from an area of skin, summation taking place.

Itching differs qualitatively from stinging pain. Tickling differs from itching merely in degree.

When strong heat stimuli act upon the skin, not merely pain sensation, but also cold and heat sensations are elicited. To this complex the term burning may be applied. It is not applicable to the cold and pain sensations together produced by very cold objects.

The diverse qualities of pain sensations are conditioned not by diversity of stimuli, but by differences in the end organs, peripheral and central.

Transitions are probably to be found between dull and biting sensations, possibly between itching and stinging, with considerable probability between itching and tickling, and certainly between stinging and biting.

The author inclines to the belief that it is the quality rather than the mere intensity of sensations which imparts to them the character of pain, but leaves the question open. W. A. JOLLY.

THE FUNCTION OF THE PITUITARY BODY. (Sur la fonction de l'hypophyse.)

(255) GEMELLI, *Arch. ital. de Biol.*, T. 50, f. 11 and 12, 1908, p. 157.

THE author has extirpated the pituitary body in frogs, dogs, cats, and rabbits. Much diversity in symptoms has been found by previous experimenters, and the author attributes this to injuries of surrounding parts caused by the operation. The buccal route has been chosen by him in mammals and a trephine opening made in the basisphenoid.

In the case of the frog the operation is a simple one. An incision is made in the mucous membrane of the roof of the mouth and the parabasal bone trephined. Many of the frogs died from accidental causes, such as sepsis; some are still alive a year and a half after operation. In mammals the operation is delicate, and often fails on account of hæmorrhage.

Eight cats were submitted to operation. During twenty-four hours they remained apathetic and somnolent. They showed no fibrillary twitching, no muscular contractions nor rigidity of the hind quarters, and no curvature of the back. After twenty-four hours they began to move and to react to external stimuli. Owing to difficulty in deglutition they were at first emaciated. Polyuria and polydipsia were observed during the first five or six days.

After fifteen days the animals appeared normal. They were killed, four after six months and four after eight months, having presented none of the symptoms described as following upon pituitary removal. *Post-mortem* only in one case was the operation found to be incomplete. In that case it is to be noted that above the nervous lobe and in continuity with a small part of the posterior glandular portion numerous colloid vesicles were found. Nothing abnormal was disclosed by histological examination of the tissues of the other cats.

A series of young and growing animals was submitted to operation. Two months later their weights were considerably less than those of the controls, and at eight months a difference in length of limbs was very visible. By periodical measurements there was demonstrated an arrest in skeletal development, beginning almost immediately after operation.

Extirpation of the pituitary body, carefully carried out, is therefore not fatal. There is perhaps compensatory functioning on the part of other similar organs. The pituitary body has an influence upon the development of the organism. W. A. JOLLY.

CONTRIBUTION TO THE PHYSIOLOGY OF THE PITUITARY (256) BODY. (Contribution à la physiologie de l'hypophyse.)

LIVON, *Journ. de physiol. et de pathol. gén.*, jan. 15, 1909, p. 16.

IN opposition to the views of de Cyon and others the author concludes from experiments on dogs that the pituitary body is not directly excitable by mechanical or electrical stimuli, and that it cannot be regarded as an organ for the auto-regulation of the circulation.

The effects upon the blood pressure which have been obtained by electrical stimulation are to be attributed to the action of the stimulus upon adjacent areas at the base of the brain.

W. A. JOLLY.

THE ACTION OF YOHIMBINE ON MEDULLATED NERVE, (257) WITH SPECIAL REFERENCE TO FATIGABILITY.

JOHN TAIT and JAS. A. GUNN, *Quart. Journ. of Exper. Physiol.*, Vol. i., 1908, p. 191.

THE physiological action on nerve of yohimbine, a drug which has found application in medicine as a local anæsthetic, was subjected to analysis by the authors. The method of investigation employed was that recently introduced into physiology by Wedensky, as a systematic means of investigating the action of drugs (especially anæsthetics) on nerve, viz., to excite the nerve with series of rapid induction shocks after the application of the substance in question. Wedensky, from the results obtained by this method, had come to class all anæsthetic substances—ether, chloroform, cocaine, chloral hydrate, etc.—in one category as having a uniform group action on nerve, the phenomena observed being precisely similar in the case of every one of them. Tait and Gunn have found the anæsthetic yohimbine to be an exception to this list; the results obtained with it do not fall in line with Wedensky's "group" action. As one instance of deviation from this group action it may be mentioned that yohimbinised nerve is fatigued by repeated stimulation with much greater readiness than is nerve treated with other anæsthetics; this fatigue is more lasting and is more obviously a function of the extent to which the nerve has been excited as well as of the time allowed for rest after excitation, than is the case in, say, cocainised or etherised nerve. In spite of the ready fatigability of yohimbinised nerve, complete restoration of function seems in every case, provided a sufficient interval of rest is given, to follow the katabolic changes due to activity. The refractory period of nerve corresponding to one single excitatory process was prolonged to ·25 second, while fatigue changes lasting for more than 5 seconds were demonstrated. JOHN TAIT.

THE REFRACTORY PHASE ASSOCIATED WITH ONE SINGLE (258) EXCITATORY PROCESS IN YOHIMBINISED NERVE.

JOHN TAIT, *Quart. Journ. of Exper. Physiol.*, Vol. ii., No. 2, 1909, p. 157.

ARGUING from the previous experiments of Tait and Gunn (see preceding abstract), the author shows that the refractory phase of yohimbinised nerve, like the refractory phase of the heart, consists of two distinct stages—a stage of absolute and a stage of relative refractoriness, the latter of greater duration than the former. By experiments with two successive stimuli, controlled at intervals by the application of series of rhythmical stimuli, he verifies this conclusion and shows that fatigue of the nerve is readily produced at a stage of yohimbinisation when almost no change in the duration of the absolutely refractory phase is elicitable. The complete refractory phase of deeply yohimbinised nerve corresponding to one single excitatory process was found to have a duration even greater than the high value previously recorded by Tait and Gunn. The value given by them was ·25 second; the author found a maximum duration of 2·2 seconds, which means that in deep yohimbine anæsthesia the nerve may take as long as 2·2 seconds to recover from the katabolism associated with the transmission of one single impulse.

By experiments carried out along two or three different lines it was shown that the fatigue which is demonstrable in excised yohimbinised nerve is never permanent like that which occurs in excised muscle. With sufficient time for rest the nerve after each spell of activity makes a complete recovery. Thus the previous statement of Tait and Gunn with regard to the capacity of yohimbinised nerve for restoration after katabolism is confirmed.

AUTHOR'S ABSTRACT.

ON A CERTAIN RETICULAR FORM OF PRECIPITATION OF (259) NERVOUS SUBSTANCE. (Sur une certaine forme réticulaire de précipitation de la substance nerveuse et sur les structures de précipitation de différents tissus organiques.) G. PIGHINI, *Arch. Ital. de Biol.*, 1908.

PIGHINI subjected films of fine emulsions of various tissues to the action of alcohol, sublimate, Müller's fluid and nitrate of silver, nitrate of silver alone, and pyridine. He found that with the two latter reagents the structure of the precipitate obtained was characteristic of each tissue, enabling one to recognise by these peculiarities the organ from which the emulsion was made.

In the cases only of emulsions from cortical substance treated with nitrate of silver and pyridine according to the procedure respectively of Cajal and Donaggio, he obtained true reticular figures—that is to say, networks formed of fine fibrillary filaments similar to those which are shown by the methods of Cajal and Donaggio.

In order to show that the structures described were the effect of a selective reaction of the colloids to the liquids employed, he mixed equal parts of gelatine with the emulsions.

Gelatine with nitrate of silver gives no precipitate, and, when mixed with the emulsion, appears to prevent any movement in the colloidal particles. Under these conditions, when treated as before with nitrate of silver or pyridine, no structure is visible, and this, according to Pighini, shows that the described structure of the precipitate is not pre-existing in the thin film of emulsion, but forms *in situ* at the moment when the experimental fluid acts on this substance—in other words, that the reticular formation is an artefact.

If Pighini's interpretation of the appearances is correct, it forms a serious indictment against the vital fibrillar structure of nerve cells; but it may be recalled that forty years ago Max Schultze demonstrated the fibrillar character of nerve cells which had merely been treated by a short maceration in serum containing a little iodine.

JOHN TURNER.

PSYCHOLOGY.

THE PSYCHOLOGY AND PSYCHOGENESIS OF HYSTERIA AND (260) THE RÔLE OF THE SYMPATHETIC SYSTEM.

THOMAS D SAVILL, *Lancet*, Feb. 13, 1909, p. 443.

IN this clinical lecture Dr Savill gives an exhaustive review of (1) the attributes of the hysterical mind; (2) the psychogenic explanation of hysterical disorders put forward by several eminent psychologists; (3) the rôle of psychogenesis in hysterical disorders and its limitations; and (4) the rôle of the sympathetic system.

After describing the characteristics of the hysterical as distinguished from the non-hysterical mind, he refers to the views of Dr Pierre Janet, Professor J. Charcot, Professor Sigmund Freud, Dr J. Breuer, and Dr Aschaffenburg as to the psychogenic origin of hysteria. The prevailing view in the profession at the present time is that all hysterical phenomena are psychogenic in origin. Dr Savill finds himself unable to agree with this as an explanation of all the phenomena of hysteria. While admitting that some hysterical disorders—notably hysterical tics, anæsthesia and other sensory changes—are of mental origin, he maintains that the sympathetic system plays the leading rôle in the production of hysterical attacks and the most definite forms of hysterical motor and sensory disorders. These, he maintains, are due to vascular changes in the brain, occurring in a person whose nervous centres are preternaturally sensitive, secondarily to vascular changes in the splanchnic area. An interesting case of hysterical hemianæsthesia, hemiparesis, and tremor, resembling an embolic lesion in the sensory crossway, is discussed at length, and the conclusion is arrived at that it was due to a transient vascular change in that region. Dr Savill has submitted proofs of these views in his various previous communications. He refers, however, to the difficulty of explaining the localisation, and points out that the same difficulty obtains in organic cerebral lesions as in functional lesions and should not be allowed to invalidate the arguments as to the nature of the lesion in either case. AGNES F. SAVILL.

PATHOLOGY.

THE HISTOLOGICAL CHANGES IN NERVE-CELLS DUE TO (261) TOTAL TEMPORARY ANÆMIA OF THE CENTRAL NERVOUS SYSTEM.

L. GOMEZ and F. H. PIKE, *Journ. Exper. Med.*, March 1909, p. 257.

WITH the return of the circulation, there is brought about a dilatation of the pericellular lymph space and slight swelling of the cell body;

these disappear as recovery progresses. Chromatolysis, as evidenced by poor staining, clumping, and breaking into dust-like particles, induced by anæmia, is not necessarily fatal. Death of the cell is not shown histologically when tissue is removed and fixed immediately after the experiment. Some time must elapse for the detection of the vacuolation, displacement of the nucleus and solution of the chromatic substance, indicative of profound changes. Neurones from different regions as well as neurones of the same region differ in degree of resistance to anæmia. The small pyramidal cells are the most susceptible, and then come the Purkinje cells, cells of the medulla, retina, cervical cord, lumbar cord, spinal ganglia, and, most resistant of all, the sympathetic ganglion cells. Failure to resuscitate animals after anæmia of the central nervous system is probably due to the destruction of many of the cells of the vital centres (vaso-motor and respiratory) which do not have histological peculiarities by which they may be defined.

J. H. HARVEY PIRIE.

CASE OF PRIMARY MYOPATHY OF THE FACIO-SCAPULO HUMERAL TYPE, FOLLOWED FOR THIRTY YEARS.

(262)

(Histoire d'un Myopathique atrophique (du type facio-scapulo-humeral) suivi pendant 30 ans.) L. LANDOUZY and L. LORTAT-JACOB, *Presse Méd.*, Feb. 27, 1909.

GREAT is the interest attached to this paper, for it completes in a peculiarly efficient manner the study of a case famous from a historical point of view. It was by the observation of this case (and that of a brother) that L. Landouzy and J. Dejerine were able to identify the facio-scapulo-humeral type of progressive muscular atrophy, now known as the Landouzy-Dejerine type of muscular atrophy. It is worthy of note that the case was followed for thirty years, that a complete post-mortem examination has been made of the muscular, nervous, and osseous systems, that the deformities of the skeleton have been completely described, and that excellent radiographs have been obtained.

The history of the case is divided into three periods. The first period terminates in 1874, when Landouzy and Dejerine were struck by the peculiarity of the face, and published the case with photographs as a progressive muscular atrophy of infancy. The second period terminates in 1885, when the extent to which the atrophy had slowly progressed was noted. The third period is from 1885 to 1902, and an account of the clinical features is given up to May 1902, when patient died at age of forty-five from pulmonary tuberculosis.

Autopsy. State of the muscles.—The changes are well seen in the biceps, the most affected muscle of the upper arm. The muscle is reduced to a mere cord of connective tissue and fat, and has a peculiar pale greyish yellow colour. Details are given of the degrees to which the various muscles of the body are affected. In the limbs the extensors are more affected than the flexors, and in the upper extremity the only muscle unaffected is the brachialis anticus. Even microscopically no trace could be found of muscular fibres in the orbicularis oris or orbicularis palpebrarum.

Histologically in the muscles most affected (deltoid) a granular appearance is seen to predominate, no trace of striation being detected: in less affected muscles (hypothenar) striation can be here and there detected. The nuclei are greatly proliferated, arranged in chains, and variously shaped; while the interstitial tissue is greatly increased, replacing the muscular fibres: fat is abundant.

Examination of the nervous system shows little of interest histologically. The anterior cornual cells are clearly visible, but in certain places there is a diffuse coloration in the cellular protoplasm. There are a few hæmorrhagic foci in the cervical cord. No alteration was detected in branches of nerves examined in muscles by means of the chloride of gold method.

Examination of the skeleton.—The skeleton is slender and like that of a female. The places of muscular insertion are smooth, bony crests are insignificant, and projections are flattened. The epiphyses are small and the diaphyses of long bones are slender, at times translucid and often considerably curved. A funnel-shaped depression at the lower end of the sternum, great increase in the obliquity of the ribs with diminution in the width of the intercostal spaces, flattening of the chest laterally and posteriorly, together with diminution in antero-posterior diameter of the chest, are some of the features of a "myopathic thorax." A description is given of a "myopathic pelvis," while changes in the vertebral column are shown to result in generalised vertebral ankylosis. There is a very marked lordosis of the lumbar spine. *Radiographs* show that in addition to a rarefacation of the compact tissue of the bones there is a peculiar fine lacework forming the structure of each bone, while abnormal transparency of many bones can be detected in many radiographs.

After pointing out that the history of this case indicates well the course of the atrophic process, and that the flexor muscles are less atrophied than the extensors, the authors state that no muscle was found normal except the brachialis anticus. Emphasis is laid—

1. On the retraction of certain muscles (especially the biceps) leading to deformity of the long bones.
2. On the total disappearance of the orbicularis oris and orbicularis palpebrarum.

3. On the changes in the skeleton, including the "myopathic thorax" and the "myopathic pelvis."
4. On the negative histological examination of the nervous system—central and peripheral—which confirms the view expressed by Landouzy and Dejerine in 1885.

This integrity of the nervous system is characteristic and essential. W. KELMAN MACDONALD.

EXPERIMENTAL ALCOHOLIC CHRONIC ANTERIOR POLIOMYELITIS.

(263) **(Experimentelle Alkohollähmung durch chronische Poliomyelitis anterior.)** AUBERTIN et LHERMITTE, *Zentralbl. f. inn. Med.*, March 13, 1909, S. 257.

THIS is a brief note of interesting experimental toxic poliomyelitis produced in rabbits as a result of dosing with absinthe for a period of many months. They became paralysed in the hinder part of the body. The peripheral nerves were quite intact, but in the cord there were very characteristic cell changes in the anterior horns: atrophy, chromatolysis, disappearance of nuclei, and finally complete disappearance of many of the cells. Along with this there was marked neuroglial overgrowth, but no change in the blood-vessels nor round-cell infiltration. The cerebral cortex showed corresponding though less pronounced cell lesions.

J. H. HARVEY PIRIE.

THE PATHOLOGY OF DEMENTIA PRÆCOX AND THE ACUTE PHASES DURING ITS COURSE.

(264) **(Sulla patologia della demenza precoce e sulla fasi acute che in essa si presentano.)** PIGHINI, *Riv. speriment. di Freniatria*, F. iii.-iv., 1908, p. 497.

IN dementia præcox certain physical conditions are just as worthy of notice as the mental, *e.g.* cyanosis of the face and extremities, circumscribed œdema, desquamation of the epidermis, diffused and copious perspiration, constant salivation, irregularity of the pulse, subnormal temperature, and oscillation of the body weight. All these symptoms are present while the disease gradually progresses towards dementia. In addition there are certain phenomena occurring in the acute phases of the disease which have not received sufficient attention.

The active stage of dementia præcox is characterised by motor agitation, accelerated pulse and respiration, elevation of temperature, dilated pupils, exaggerated tendon reflexes, muscular tremor, acetone in the breath, refusal of food, excretion of thick urine very rich in nitrogen compounds, phosphorus, and sulphur, and rapid diminution of the body weight. With these physical signs there is mental confusion, hallucinatory delirium, and psychic excitement. The syndrome is that of amentia, but must not be confused with true amentia, from which it is separable by the preservation of the power of orientation, by the mannerisms which the patients assume, and by the tendency to terminate in simple mental weakness, catatonic stupor, or paranoid delirium.

In studying the metabolic processes in dementia præcox, the author has been struck by the fact that in some cases there is delayed excretion and retention of nitrogen and phosphorus, while in others there is an exaggerated elimination of these bodies. The retention occurs at an advanced stage of the disease, the increased elimination at an early stage or during an exacerbation. Pighini's conclusion is that in the acute phases there is destruction of nucleoproteids, and with this a progressive diminution of body weight accompanied by increased elimination of urea.

Diminution of weight in the acute phases must be clearly distinguished from that occurring in the chronic and terminal phases. Here it is probably due to defective absorption from deficient functional power on the part of the viscera.

The symptoms during the acute stage of dementia præcox are the result of a destructive process quite distinct from that accompanying ordinary febrile conditions. The decomposition of proteids is induced by some unknown morbid condition which probably is not due to toxic action. It is probable that some part of the nervous tissue is electively affected by the morbid agent. This opinion is confirmed by finding systematic lesions in the cortex, even in the early stage of the disease; and recent investigations show that in the cortex there is a diminution of neutral and an increase of inorganic sulphur. The acute symptoms of dementia præcox occur when the irritative and destructive processes are at their height.

DAVID ORR.

CLINICAL NEUROLOGY.

POLYNEURITIS DURING PREGNANCY. (Un Cas de Polynévrite (265) pendant La Grossesse.) L. A. KRIVSKY, *Ann. de Gynéc. et D'Obstét.*, Fev. 1909.

THE case is that of a woman, age 23, who towards the end of her third pregnancy suddenly developed symptoms of acute polyneuritis. For several years she had been markedly anæmic and constipated, and had shown manifestations of hysteria. During the first pregnancy anæmia and constipation had been aggravated, and there had been some vomiting. The second pregnancy ended in abortion at the second month. The third ran a normal course till between the seventh and eighth month. At this time there had been a slight indisposition, but she was able to take walking exercise, and while doing so suddenly fell to the ground owing to weakness of the legs. She had to be carried home, and lay with the legs drawn up owing to weakness of extensor muscles; there was no pain and the patellar reflex was slightly increased. Two days later movement of lower extremities more interfered with, and the arms became weak. Following on this there was wasting of muscles, with absence of reflexes in both arms and legs, pain in the muscles, and extreme tenderness on pressure. The paralysis progressed, involving the larynx and the intercostal muscles. Seven days after the onset labour set in, and was completed by dilatation of the cervix and version on the day following, an eight months' living child being born. The uterine contractions were strong, and at no time was there any interference with the action of the bladder or bowels. For two days after confinement there was a slight improvement, then the general feebleness became more marked, deglutition was interfered with, and the pneumogastric affected. She died on the seventh day of the puerperium. Diagnosis at first lay between Landry's paralysis and acute polyneuritis. The rapid onset with paraplegia and the ascending nature of the affection was very like the former, but the muscular atrophy and the extreme muscular tenderness seemed to exclude it in favour of a multiple neuritis. In discussing the possible etiological factor in the production of the neuritis, the author inclines to the view expressed by other observers quoted, that it is probably to be found in an autotoxæmia of the same nature as that causing the pernicious vomiting and eclampsia of pregnancy. On this assumption he thinks the advisability of terminating the pregnancy ought to be considered in such cases. B. P. Watson.

ATAXIC ARSENICAL NEURITIS WITH LOSS OF OSSEOUS (266) SENSIBILITY.

C. M. Byrnes, *Journ. Amer. Med. Assoc.*, Vol. lii., No. 12.

The case reported is a typical one. Attention is particularly drawn to the loss of "vibratory sense," as it illustrates the further resemblance of the ataxic form of neuritis to tabes dorsalis.

D. K. Henderson.

SOME UNUSUAL SYMPTOMS IN MYASTHENIA GRAVIS.

(267) Frederick E. Batten, *Clin. Journ.*, Vol. xxxiii., p. 318.

In the lecture the writer describes two cases of myasthenia gravis, exhibiting unusual symptoms. The first, a girl of 25, showed marked weakness of the muscles of the pelvic girdle without any bulbar symptoms, although the disease had been present for over four years.

The second case was unusual in that symptoms had been present for over fifteen years, and the disease had remained practically stationary during that time. The patient by taking care to rest, especially during the menstrual period, was able to lead a normal life. AUTHOR'S ABSTRACT.

TABES WITH HÆMATEMESIS, ATYPICAL HERPES ZOSTER, AND SECRETION OF MILK IN A WOMAN AGED 62.

(268) **(Tabes dorsalis mit Haematemesis und Herpes Zoster atypicus während des Verlaufes und Milchsekretion bei einer 62 jährigen Frau.)** A. SIDING, *Wien. klin. Woch.*, 1909, Nos. 8 and 9, pp. 269 and 306.

THE milk secretion which appeared eleven years after the birth of the last child, and nine years after the menopause, and was not associated with any morbid condition of the breast, is regarded by Siding as a reflex neurosis due to tabetic disturbance of the abdominal sympathetic, other manifestations of which were nervous hæmatemesis, extensive areas of herpes, and possibly a high degree of ovarian atrophy. J. D. ROLLESTON.

JUVENILE TABES AND GENERAL PARALYSIS FROM ACQUIRED SYPHILIS.

(269) **(Tabes et paralysie générale juvéniles par syphilis acquise.)** APERT, LÉVY-FRAENKEL and MÉNARD, *Arch. de méd. des enf.*, 1908, p. 477.

A GIRL, aged 15 years, was admitted to hospital in 1907, with the following history:—The father had contracted syphilis in 1894, had developed tabes in 1900, and general paralysis in 1906. Both the mother and daughter, who shared his bed, were infected in 1894. The mother developed tabes six years later. In 1906 the daughter showed definite evidence of tabes and certain psychical changes suggestive of general paralysis. J. D. ROLLESTON.

CASE OF SYRINGOMYELIA SUCCESSFULLY TREATED BY X-RAYS.

(270) **(Un Cas de Syringomyélie traité avec succés par les rayons X.)** I. HOLMGREN et OLOF WIMAN, *Nordiskt Med. Arkiv-Inre Medicin*, Afd. ii., häft 3, Stockholm, Feb. 3, 1909.

SUCH considerable success attended the application of the Rontgen Rays in the case of syringomyelia which is detailed in the above journal, that the authors felt they were justified in publishing the results obtained, in the hope that others who have patients suffering from this hitherto intractable but fortunately somewhat uncommon condition may be encouraged to try the remedy which they have found so beneficial.

The patient was a Swedish carpenter, aged 51 years. In his family and personal history there is nothing of any importance. His illness commenced eight years previously, rather suddenly, after exposure at his work to extreme cold, by a blister forming on his left heel, which subsequently developed into an ulcer that defied treatment. This was followed by other similar ulcers on the plantar surfaces of both feet, and especially of the toes. Considerably later identical trophic ulceration appeared on the palmar aspect of the terminal joint of the left thumb, and accompanying this there was an alteration in the sensibility of the hand which extended gradually up the arm: later, similar loss of sensation was experienced in the right arm and the left leg, but not, as far as the patient was aware, in the right lower limb. Preceding this diminished sensibility, which, as the patient himself declared, was especially marked to painful and thermal impressions, there were shooting pains in the limbs, and following it there was a gradual wasting of the thenar and hypothenar eminences and the interossei resulting in a typical " main en griffe " in both hands with greatly diminished power of voluntary movement. The only other feature of importance in the case was that for twenty years the patient had had a curious, irregular, patchy erythematous condition of the back, which had never caused him the slightest inconvenience. With this history he was admitted into the hospital at Falun under Dr Holmgren and Dr Wiman, who proceeded to investigate his condition thoroughly, and this is detailed both prior to and after the application of the X-rays. Diagrams are given showing the extent of the anæsthesia to tactile, painful and thermal stimuli respectively; they are interesting in exhibiting an almost exact correspondence on the two sides of the body for each of these. But whereas the tactile sense is lost only as far as the ulnar border of both elbows and to mid-thighs, the loss to pain and temperature extends to the shoulders and the hips.

The treatment was carried out for a month, and consisted in the daily application of the rays to the neck for periods of ten minutes, the anticathode being at a distance of 25 cm. from the skin. Care was taken not to excite more than a very slight redness of the skin.

After a month the patient's condition was again carefully investigated and recorded, together with comparative diagrams, showing the alterations in the anæsthetic areas. The most remarkable change was the recovery of the power of voluntary movement in the hands, but there was also a distinct diminution of the anæsthetic areas in the upper extremities, especially on the right side. There was practically no alteration in the lower limbs.

Dr Holmgren then discusses at great length the diagnosis of the case, eliminating in particular anæsthetic leprosy, to which there are many points of resemblance, in the trophic lesions, the wasting of the interossei and the anæsthesia. He also notes how rare the condition is of a combined syringomyelia affecting the cervical as well as the lumbar enlargement. But he shows that at no period of the history of the case had the patient exhibited tenderness of the palpable nerve trunks, nor—and this Dr Holmgren regards as almost pathognomonic—had there ever been any leprous nodules on the branches of the peripheral nerves. The absence of any affection of the face also, in his opinion, excludes leprosy. As regards the treatment and its results, the authors especially emphasise the extraordinary recovery of voluntary power of movement in the hands, enabling the man to a certain extent to resume his occupation, and on this ground they indicate the advisability of early treatment by the X-rays in such cases.

C. J. ROBERTSON MILNE.

ACUTE SYPHILITIC DISEASE OF THE SPINAL CORD. JOSEPH (271) COLLINS and CHARLES G. TAYLOR, *Amer. Journ. Med. Sc.*, Feb 1909.

THE literature on the subject is reviewed, and a case is reported which is summarised clinically and pathologically as follows :—

A young man, 23 years old, became infected with syphilis in September 1907. In December 1907 he had aphonia due to syphilitic meningitis. Six months after infection he developed weakness, stiffness, and paræsthesia of the lower extremities, and had slight difficulty in urinating. A moderate paraplegia developed, with lively knee-jerks and Babinski's sign on both sides. This was promptly followed by retention of urine and later by incontinence of urine and fæces and impotence. After a month he recovered sufficiently to leave the hospital, the symptoms at this time being characteristic of syphilitic spinal paralysis. Cystitis and surgical kidney developed rapidly, and he died eight months after infection, during which time he had been given anti-syphilitic treatment.

Pathology.—Areas of softening principally in the posterior half of the cord, on transverse section, extending from the first to the ninth dorsal segment, associated with changes in the blood vessels, thickening and round cell infiltration of the vessel walls, vascular thrombosis and hæmorrhages ; syphilitic myelitis ; sclerotic patches due in part to growth of glia cells, principally toward the periphery of the cord, especially of the posterior and postero-lateral tracts. Secondary degeneration of posterior columns, especially the column of Goll, and also of the direct cerebellar tract and Gowers' tract in upper thoracic and cervical regions ; slight but distinct productive meningitis. Cells of Clarke's column much degenerated, those of the anterior horn suffering to a much less extent, possibly the effect of sepsis. The writer holds that at least some cases of syphilitic spinal paralysis are dependent upon syphilitic myelitis.

D. K. HENDERSON.

A CASE OF ACUTE ASCENDING PARALYSIS. HENRY J. DEAN, (272) *Brit. Med. Journ.*, Feb. 27, 1909.

THE disease occurred in a young man, 24 years of age, previously quite healthy, and appears to have been due to getting wet whilst cycling a week previous to the onset of symptoms, and ran a rapid course in about four days.

It began with pains in the shoulders, legs, and back, with a feeling of numbness from the middle of the body down to the feet, and complete loss of knee-jerks. This was followed by a rapidly asending paralysis of the legs, trunk and arms. The voice soon became weak and husky, he had no power to cough, and swallowing was difficult, but there appeared to be no paralysis of tongue or palate. The movements of the chest were impaired, but no actual dyspnœa or violent respiratory struggles. Sensation was unaffected, the muscles remained of normal firmness and were not tender when handled. His mental faculties remained quite clear to the end, and no rise of temperature occurred until within three hours of death, and only just before death were the sphincters affected. It was noted that (*a*) the posterior muscles of the legs and thighs were affected before or to a greater extent than the anterior, (*b*) the muscles moving the upper arm on the scapula before those of the forearm.

AUTHOR'S ABSTRACT.

URÆMIC MENINGITIS. SCARLATINAL MENINGITIS. (Méningites urémiques. Méningites scarlatineuses.) HUTINEL, (273) *Progrès Méd.*, 1909, No. 9, p. 109.

HUTINEL records a case of postscarlatinal uræmia in a boy, aged 15 years. Bleeding produced a slight improvement, but fever due to a small abscess in the thigh ensued, and was followed by convulsions and coma, which were at first attributed to uræmia, but which lumbar puncture and the autopsy showed to depend upon a suppurative cerebro-spinal meningitis of pneumococcal origin. The case presents two interesting features—(1) The occurrence of meningitis in scarlatinal nephritis; (2) the difficulty of differentiating convulsive phenomena of meningeal origin from convulsive uræmia in scarlet fever. The presence of anasarca facilitated a rapid diffusion of the germs from the abscess in the thigh, thus giving rise to septicæmia. The diminished resistance of the meninges due to uræmic convulsions offers a probable explanation of the subsequent infection. This case resembles that reported by Teissier, in which the meningitis was due to septicæmia and not to spread of infection from the nose or ear (*v. Rev. of Neurol. and Psych.*, 1909, p. 199). J. D. ROLLESTON.

ACUTE CEREBRO-SPINAL MENINGOCOCCAL MENINGITIS (274) CURED BY LUMBAR PUNCTURE. (Sur un cas de méningite aiguë cérébro-spinale à méningocoques guérie par la ponction lombaire.) F. CARLES, *Journ. de Méd. de Bordeaux*, 1909, p. 10.

CARLES, whose previous paper on the therapeutical value of lumbar puncture has been abstracted in this *Review* (1908, p. 557), records a case of a boy, aged 19 months, in whom four lumbar punctures within twelve days were followed by complete recovery. The fluid removed at the first two punctures was under high tension, turbid, and showed abundant polymorphs and meningococci. At the third puncture the fluid escaped drop by drop, was quite transparent, free from meningococci, and showed an almost equal number of polymorphs and lymphocytes. At the fourth puncture the polymorphs had almost entirely disappeared, and only a few lymphocytes were to be seen. J. D. ROLLESTON.

CHRONIC SYPHILITIC MENINGO-MYELITIS ARISING 30 (275) YEARS AFTER INFECTION. (Méningo-myélite chronique syphilitique apparue 30 ans après le chancre infectant.) BRISSAUD and BAUER, *Rev. Neurol.*, 1909, p. 94. (Soc. de Neurol.) DEJERINE, BABINSKI, and RAYMOND, *ibid.*, p. 96.

A MAN, aged 52, was admitted to hospital for pain in the lower limbs and incontinence of urine. These symptoms, which had appeared a year ago, were associated with exaggeration of the knee and ankle jerks, slight contracture of the lower limbs, a suggestion of spastic gait, Argyll Robertson pupils, and very marked spinal leucocytosis in which the high percentage of the polymorphs (45 per cent.) seemed to indicate a subacute process. He had contracted syphilis at twenty-one. Treatment had lasted only for a few weeks. For the next thirty years he had enjoyed excellent health. He had married at twenty-four. His wife had had six pregnancies, two of which had ended in a miscarriage. Two children were born dead, and the remaining two had died of meningitis at two or three years. In the subsequent discussion Dejerine cited a case of a man, aged sixty-seven, in whom tabes had appeared fifty years after infection. Babinski related the case of a man infected at twenty-three, who enjoyed apparently perfect health till sixty-three, when the first signs of tabes developed. Raymond stated that the longest interval which he had known between the chancre and the onset of tabes was fifty-two years. J. D. ROLLESTON.

A CASE OF GLIOMA OF THE OPTIC THALAMUS.

(276) W. C. HEGGIE and ERNEST JONES, *Trans. of the Ontario Acad. of Med.*, March 16, 1909.

A CLINICAL and pathological account is given of a case, in which death ensued on the day after the undertaking of a palliative operation. Noteworthy among the symptoms was a pronounced cerebellar attitude. Movements characteristic of thalamic affection were present, and on account of them the case had previously been mistaken for one of chorea. The tumour was confined to the posterior two-thirds of the thalamus, though it was not sharply circumscribed.

AUTHORS' ABSTRACT.

MENTAL DISORDERS IN DISSEMINATED SCLERORIS. (Les troubles mentaux dans la sclérose en plaques.)

(277) RAYMOND, *Journ. des Prat.*, Feb. 27, 1909.

THIS is an account of a demonstration of five cases at Salpêtrière. Of these, three suffered from spasmodic laughter and weeping and from slight loss of memory, two showed "mental puerility" and difficulty in voluntary attention, one had difficulty in mental arithmetic and could not read a number of more than three digits or a word of more than three letters, and one had suicidal ideas for a short time. One patient, whose limbs were thrown about in all directions whenever he attempted to walk, is accused of being a psychasthenic, because he suffered from the "fear of walking." This is surely rather far-fetched, as indeed is the whole subject. We know from experience that disseminated sclerosis is practically never seen in asylums. W. H. B. STODDART.

TRAUMATIC AMNESIA.

(278) RICHARDSON, *Amer. Journ. of Insanity*, Jan. 1909, Vol. lxv., p. 509.

RICHARDSON gives an account of a remarkable medico-legal case. A young man after quarrelling with his mistress shot her dead and then fired at himself, causing a slight neck wound. On his arrest he protested ignorance of all the circumstances, and maintained that he was in another part of the city at the time of the crime.

No other mental anomalies were found on examination, but the court declared him a lunatic on the ground that he was unable to confer with his lawyers. The account given of the case is insufficient to enable a reader to form any opinion in the matter.

ERNEST JONES.

THE CEREBRO-SPINAL FLUID IN RELATION TO THE DIAGNOSIS OF METASYPHILIS OF THE NERVOUS SYSTEM.

(279) ERNEST JONES, *Bull. of the Ontario Hosp. for the Insane*, March 1909, Vol. ii., No. 3.

THIS is a general review of the subject, with an extensive bibliography. Apart from the Wassermann reaction, which is also described, the three cardinal signs are considered to be the increase in pressure, increase in globulin content and lymphocytosis.

AUTHOR'S ABSTRACT.

HYSTERICAL FEVER. (Sur la fièvre hystérique.)

(280) F. SOCA, *Rev. Neurol.*, 1909, p. 103. (Soc. de Neurol.)

THE recorded cases of hysterical fever may be divided into three classes—(1) Those in which the fever is produced or arrested by suggestion; (2) those in which an extraordinarily high temperature is not explained by any organic cause and is associated with hysterical phenomena; (3) those in which the fever is extraordinarily high, or shows a peculiar distribution, *e.g.* 111·2 in one axilla and 98·6 in the other.

The first class does not really exist, and no satisfactory case has been published illustrative of the second class, in which a latent disease, such as tuberculosis or some form of septicæmia, may always be present.

The third class alone deserves consideration. In almost all the cases in this class an organic disease is present, though it does not account for the extraordinary height and distribution of the temperature. Soca records the following illustrative case:—

A woman, aged 26, while suffering from appendicitis had a hysterical attack, during which the axillary temperature was 113°. Special care was taken to prevent simulation, and several different thermometers were used. The following day a precisely similar attack occurred, the thermometer rising to 113° and falling to normal in the course of two hours. For a week there was a repetition of similar attacks once or twice in the twenty-four hours, but the temperature did not reach the same height. After removal of the appendix complete recovery took place.

J. D. ROLLESTON.

GASTRIC NEUROSES. JOHN B. DEAVER, *Amer. Journ. Med. Sc.*, (281) Feb. 1909.

UNDER the term " nervous dyspepsia " the most diverse symptom-complexes—sensory, motor, secretory—have been grouped. If the condition is a true neurosis it will, as a rule, be accompanied by a train of symptoms affecting the most widely separated organs and the most diverse body functions. The methods in use for determining gastric motility and secretory power are unsatisfactory, and the most important aids in the diagnosis of the condition are a study of the constitution of the patient and the variability of the symptoms. Surgical operation for mental effect is in these cases characterised as unsafe, illogical and a bad precedent.

D. K. HENDERSON.

MENTAL CAUSES IN BODILY DISEASE: THE MOST FRE-(282) QUENT CAUSE OF THE ORIGIN OF "NERVOUS INDIGESTION." TOM WILLIAMS, *Journ. of Abnormal Psychol.*, Feb.-March 1909, Vol. iii., p. 386.

WILLIAMS points out that medical writers often fail to make a sharp enough distinction between gastric disorders and symptoms of true nervous origin—such as the tabetic crises, Menière's disease, etc.—and those of psychic origin. The latter form a quite different class and a far commoner one. The fact that gastric activity is outside the control of the conscious will has misled physicians into thinking that it is outside the influence of the mind altogether. The influence of emotion on various secretions, saliva, urine, etc., is well known, and Pawlow has definitely proved that gastric secretion is effected in precisely the same way as these. Ignorance of the true origin of the huge class of " functional dyspepsia " is harmful, not only in that erroneous treatment is thereby instituted, but also in that suggestion on the part of the physician that the stomach itself is affected often makes subsequent mental treatment more difficult.

ERNEST JONES.

THYMUS ENLARGEMENT ASSOCIATED WITH NERVOUS (283) SYMPTOMS. OTTO LERCH, *Med. Record*, March 6, 1909.

IN this preliminary communication the writer states that the symptoms of enlargement of the thymus are the symptoms of the functional neuroses and probably of some forms of functional insanity, mania, melancholia and paranoia. From the enlarged gland the severity of the symptoms can be predicted, and from the symptoms the size of the gland. Cases are recorded to illustrate the affection. The writer claims that in eight cases suffering from functional forms of insanity he found marked dulness on percussion over the thymus and the usual symptoms—dilated pupils, tremor of the hands, and exaggerated reflexes. D. K. HENDERSON.

NERVE STRAIN OF SCHOOL CHILDREN. LOUIS FLANDERS, (284) *Boston Med. and Surg. Journ.*, Feb. 25, 1909, p. 232.

A FEW experiences of nerve strain in children are given, and measures of prevention are indicated. W. KELMAN MACDONALD.

NERVOUS DISORDERS IN WOMEN SIMULATING PELVIC (285) **DISEASE.** CLARA T. DERCUM, *Journ. Amer. Med. Assoc.*, Vol. lii., No. 9.

THE writer analyses 591 cases and tabulates statistics. There is no special relation between hysterical stigmata and neurasthenic symptoms on the one hand and pelvic disease on the other. Operations on the pelvic and other viscera for the relief of nervous symptoms have no justification. D. K. HENDERSON.

A STUDY OF ALCOHOLISM. GEORGE B. LAWSON, *New York Med.* (286) *Journ.*, March 6, 1909, p. 480.

IN this paper the author deals with observations made on 400 cases in the alcohol ward of King's County Hospital, Brooklyn, besides a number of cases in other wards.

Most of the cases of delirium tremens were from whisky, only one from beer alone.

A case is mentioned of a patient who was said never to have drunk till some domestic trouble arose, and in whose case ten days of hard drinking brought on a very severe delirium, death resulting in twenty-four hours after its onset.

The author classifies the cases with delirium as follows:—(1) The ordinary form—delirium with marked tremor, sleeplessness, visual and auditory hallucinations, etc.—coming on after prolonged alcoholism. (2) The convulsive type. This is a type characterised by general convulsions, accompanied in the intervals by delirium or coma. Cases of epilepsy accentuated by alcoholism are not considered as belonging to this category. In none of the cases did the convulsions last longer than thirty-six hours, the result being recovery or death in less than that time. Prognosis was generally pretty easy after twelve hours. One patient who has previously had no strychnine, as far as could be ascertained, had typical strychnine convulsions, the attacks coming on every five minutes. He recovered. (3) A type with wet brain or serous meningitis is characterised by low muttering delirium, constant movements of hands and arms, weakness, irritability, resistance to all passive movements, a dry skin and open mouth, eyes usually slightly open, insomnia present. The condition may develop gradually or may follow ordinary delirium. The pulse is usually rapid; temperature a little above normal. As the disease advances Kernig's sign is marked with stiffness of neck muscles or even head retraction. Head retraction is usually a very grave sign, though patient may have it for part of a day and recover; and many fatal cases never show either this or Kernig's sign. The duration of the disease is sometimes as long as eight weeks.

In a few cases hyperpyrexia develops.

Coagulation time of the blood was tested in all classes of alcoholic cases. In a few of the cases of wet brain with meningeal symptoms the time was delayed from seven to ten minutes; in the majority of the cases there was no delay. (4) Delirium with hyperpyrexia. The writer has seen only one recovery where the temperature reached 105° F. (5) Korsakow's psychosis. Only one of the patients showed this syndrome.

As to treatment, the author doubts whether it is best to remove all alcohol at once. Careful feeding is very important. It was found that in forty cases, after using Ewald-Boas test meal, the total acidity was decreased in every case except one, that of a beer drinker, in whom it was found normal. In this relation one person not accustomed to alcohol was given three and a half ounces of whisky in divided doses. When the acidity was tested there was found to be a decrease in hydrochloric acid, while a test meal made the following day showed the normal amount. The test meal seemed to disappear quicker from the stomach of the alcoholic than from that of an ordinary patient.

One alcoholic died from cessation of respiration when the stomach tube was passed.

On the basis of loss of secretory activity of the stomach, milk with pepsin and dilute hydrochloric acid was tried, in some cases with whisky. In two wet brain cases there was a marked temporary improvement.

If the patient has eaten well during the debauch the prognosis is good, whereas if he has eaten nothing anxiety must be felt even in the absence of delirium.

It seems rational, if we do not use alcohol in our feeding, to use foods as near alcohol as possible, viz., the carbohydrates and fats.

One must endeavour to promote the action of the secretory organs. A patient who had gradually become weaker improved greatly after he had drunk about a quart of water. This was tried in other cases, and seemed to give better results than any other method of treatment.

In most cases of delirium some hypnotic was used—morphine hypodermically, bromides, chloral, paraldehyde, and occasionally hyoscine.

The author is uncertain whether these did any good or not. It is probably better to use hypnotics hypodermically if possible. A feeling grew in the hospital that some deaths were attributed to the use of hyoscine.

As regards restraint, one has to resort to it unless a reliable attendant can be constantly present. The value of ergot, digitalis and strychnine is still more or less in doubt.

In a few extreme cases of wet brain lumbar puncture was used without marked benefit. A. HILL BUCHAN.

CHOKED DISC AND BRAIN SURGERY. (Stauungs-Papille und (287) **Gehirnchirurgie (Sammelreferat).)** GREEFF (Berlin), *Fortschr. der Med.*, No. 6, 1909, p. 225.

THIS short review by Prof. Greeff of Berlin deals mainly with two papers which have recently appeared in Germany. The first, by Dr W. Thorner, in Von Graefe's *Archiv für Ophthalmologie*, 69, 3/08, and the second von Hippel's paper, of which a full abstract appeared in a recent number of this periodical. Thorner's paper is in part made up of an exposition of certain elementary laws of hydrostatics and the application of these laws to the physical conditions existing within the cranial cavity and the optic nerve sheath. He seeks to demonstrate that raised intracranial tension would be much more likely to cause marked exophthalmos than optic neuritis. The second part of Thorner's paper details a series of somewhat crude experiments which the author has devised and which he thinks support the toxic theory of the origin of optic neuritis as against the mechanical theory. The remainder of Greeff's short paper is taken up with an abstract of von Hippel's paper already referred to. LESLIE PATON.

PSYCHIATRY.

ON LATE RECOVERY FROM THE PSYCHOSES. Über Spät- (288) **heilung von Psychosen. Eine monographische Studie.)** ALFRED PETRÉN, *Nord. Med. Arkiv.*, Abt. ii., Bd. 40, H. 3-4, und Bd. 41, H. 1-2, 1907-8.

IN a short introductory chapter the writer first discusses the question what we are to understand by a *complete* recovery, recalling that

Kraepelin and his school draw a sharp distinction between this and a defective recovery, the latter very frequently representing merely a more or less prolonged remission in the course of a chronic psychosis which ultimately leads to idiocy. The writer points out that in order to diagnose a complete recovery, it is necessary that besides the disappearance of all the positive morbid symptoms and the presence of thorough insight into the illness, there should be a return of entire evenness of mood, that the level of the intelligence should be in no way lowered, that the power of work should be what it was before, that the tendencies and habits of healthy life with its interests should be regained; in other words, that the old mental personality should be completely re-established. He shows, further, that one should never be prepared with a definite judgment on this point when a patient is discharged, but should wait at least for a year and a day to discover whether the patient shows the same healthy condition outside in society as under the quiet care of the institution, and whether no defects make themselves evident in his recovery. Even when all these conditions are fulfilled, the writer does not include among *real* recoveries those cases in which the disease has previously shown a more marked periodic course, and in which, therefore, a fresh outbreak will very probably sooner or later occur. As to the limits of the duration of the disease, he gives it as four years.

In a second part of the introductory chapter, the writer states his attitude to the "System." Agreeing in the main with Kraepelin's views, he yet differs from them in some points. He raises the objection to Kraepelin's definition of manic-depressive insanity, which as we know includes along with periodic and circular forms only "simple" mania, but not "simple" depressive-stuporose psychoses, that it is not at all possible to assert that the latter form will *always* assume a periodic course. Whilst he maintains that in the determining of a form of disease the frequency of the attacks should hardly be considered at all, but that the clinical picture itself should always determine the diagnosis, the writer points out that the characteristics of the morbid picture in question are on the one hand exalted, happy spirits, flight of ideas, and motor excitement (such as exaggerated restless activity), on the other hand depression, motor and associative inhibition, whilst the presence or absence of hallucinations or sensory illusions has as little significance with regard to the diagnosis of manic-depressive psychosis as have periodicity or non-periodicity. With this form, therefore, the author classes both the numerous cases in which manic *and* depressive stuporose pictures (and the so-called mixed-conditions) *or* only one of these symptom-complexes recur with more or less marked periodicity, and also the undoubtedly less frequent cases, in which either of these symptom-forms (or perhaps both) occur only once or twice, perhaps only a single time during the whole life. Then as regards the range (*Umfang*) of dementia præcox, the writer cannot entirely follow Kraepelin; he does not think it right to include the *whole* group of Magnan's chronic delirium, since many cases belong to it in which *both* the characteristic defects of dementia præcox (the depression of spirits and the *general* loss of decision) may be absent for many years, cases which therefore correspond to the group which Kraepelin in his discussion upon the termination of dementia præcox has described by the title—hallucinatory derangement. Finally he shows that besides this form and real paranoia in Kraepelin's sense, there are—and this is very important as regards prognosis—other paranoia-like psychoses, in which hallucinations of a certain kind (ideas of grandeur, of persecution, or not infrequently hypochondria) develop very rapidly, and persist unaltered during the whole course of the disease, a form which Magnan describes by the name of "délire systématisé chez les dégénérés," and which, from certain points of view, greatly resembles the other degenerative psychoses, such as the hysterical and the fixed ideas, between which there may be all the transition forms.

In the second chapter, which occupies nearly two-thirds of the whole work, the author examines closely, from the above points of view (kind of recovery and form of disease) cases of late recovery of the psychoses hitherto published—at dates widely separated from each other and by authors with very different psychiatric opinions. From this investigation (the results of which are given in table form) it appears that in the majority of these cases, especially in view of the frequent defects in the data of the after-history, it is by no means proved that the recovery was complete, and that in many cases it is quite obvious that it was not so.

In Chapter III. the author fully describes eight cases of his own in which there certainly was late recovery, with a duration of the illness between four and a half and twelve years. In five of these he himself examined his former patients several years after recovery, whilst in two of the others the after-history is contributed by other specialists on the ground of personal knowledge.

In the fourth and last chapter, introduced by a table which contains, besides the writer's own cases, all those hitherto published in which recovery was undoubtedly complete, and the diagnosis certain, thirty-one in all, the conclusions are given which may be derived from the investigation. The most important of these may be summarised in the following sentences:—

1. *The majority of late recoveries, with complete cure, belong to the class of manic-depressive insanity.* Here it should be noted:

(*a*) that these cases as a rule occur comparatively late in life;
(*b*) that heredity is less frequent than it usually is in this form

whilst on the contrary certain exogenous causes are almost always present;

(c) that amongst them all the various morbid-pictures which belong to this form occur, not merely the manic and depressive, but also the paranoic conditions, *which latter deserves special consideration in order to avoid errors in prognosis*;

(d) that in certain of these cases—when, for instance, there is severe nostalgia, or a protracted convalescence which does not require nursing—*discharge of the patient may have an effect upon the further progress of the convalescence.*

2. *Complete recovery may take place in catatonia, which, after the above-mentioned forms, shows the greatest number of late recoveries.* Here it should be noted:

(a) that these cases also usually occur somewhat late in life;

(b) that heredity is here also somewhat less frequent than it usually is in this form, whilst definite exogenous causes were present in the majority of the cases;

(c) that amongst them there were not only acute cases, but others in which the disease had developed very slowly;

(d) that, as regards the morbid picture, these cases included both conditions of stupor (of various characters) and conditions of excitement;

(e) that in none of these cases had there been a previous attack of the disease.

3. *Late recovery may take place also in the form described by Magnan as "délire systematisé."*

The writer concludes by pointing out a fact, the statement of which is of the very greatest significance, not least from a medico-legal point of view, that in certain forms complete recovery may take place after an illness which has lasted for several years, ten or even longer. Whilst he remembers that at the time when most of the cases which did not recover in the course of a few years were described as "secondary dementia," the determination as to whether a case was curable or not depended mainly on the duration of the illness, the author emphasises the fact that the *forming of a real diagnosis is much more important* now, as this constitutes the first condition requisite for the formation of a probable prognosis. He warns his readers not to give a verdict of incurability in a manic-depressive pscyhosis, unless there are marked arterio-sclerotic or senile complications present, and refers to two of his own cases in which recovery took place, after marriage had been made legally impossible on the ground of a certificate of incurability given by a specialist in the profession. AUTHOR'S ABSTRACT.

A STUDY OF EMOTIONAL EXPRESSION IN DEMENTIA (289) PRÆCOX.

De Bruyn, *Journ. of Abnormal Psychol.*, Feb.-March, 1909, Vol. iii., p. 378.

Eleven patients who showed no emotional reaction were tested by noting the effect on the respiratory and vaso-motor systems of various stimuli—*e.g.* odours, whistles, severe pin-pricks etc.—suddenly applied. In 177 experiments some physiological response was found 121 times. The writer concludes that the passivity of the disease is due to active inhibition and not to any defect in capacity. Ernest Jones.

THE KNEE-JERK IN PARESIS. (290)

Shepherd Ivory Franz, *Amer. Journ. of Insanity*, Jan. 1909, Vol. lxv., p. 471.

Franz has investigated the state of the knee-jerk in 138 cases of general paralysis, and has collected notes of over 4000 cases from the literature. Of these it was exaggerated in 47·3 per cent., in many of which it was clonic in character, and diminished or absent in 28·1 per cent. Ankle clonus was present in 15 per cent. of the cases examined, and never occurred except with exaggerated knee-jerks. There was a decided correlation between Argyll-Robertson pupils and absent knee-jerks. The expected duration of life of the patients who entered hospital with absent knee-jerk was thirteen months, that of those with normal or exaggerated knee-jerk twenty months. Ernest Jones.

TREATMENT.

THE TREATMENT OF INEBRIETY. (Die Behandlung der Trunksucht.) (291)

L. W. Weber, *Deutsche Med. Wochenschr.*, Feb. 18, 1909, p. 281.

At the present day inebriety has come to be regarded even by the laity as a disease, to be treated by medical means. This fact has important bearings on the whole question of alcoholism, more especially from the point of view of prophylaxis. We now know sufficient of the physiology of alcohol metabolism not to expect any effect of a strengthening nature on the growing organism from the exhibition of alcohol. The former use of wines in the treatment of badly nourished anæmic or feverish infants or children must be regarded as an error.

The family doctor should exert his influence to prevent the regular use of even moderate quantities of alcohol, at least till about the end of puberty. The idea that a person who has hitherto been entirely unaccustomed to the use of alcohol is more liable to go astray in this respect when he enters on life is entirely without foundation. Abstinence never makes anyone intolerant of alcohol.

When we recognise the fact that the greater number of drunkards are persons predisposed to the habit by degeneration, it is clear that a medical man ought to seek to influence such persons as present signs indicative of degeneration to abstain from alcohol altogether.

Further, there are inebriates who have acquired the disease while suffering from some bodily ailment, by the injudicious or too prolonged therapeutic use of alcohol. Alcohol in long-continued but curable ailments can be replaced by various other remedies. This holds true, for example, as regards the use of wine to anæmic girls or women, or the administration of beer during lactation. Even " wine " as " the milk of age " must have a very limited use when one is dealing with persons of a nervous temperament, who are naturally predisposed to become the victims of alcoholism.

The treatment of inebriety has a twofold aim :

1. The patient must be deprived of alcoholic beverages, so that later he is in a position of his own free will entirely to abstain from them.
2. The bodily and psychic changes which have been caused by the chronic alcoholic poisoning must be treated and, as far as possible, cured.

Success in treatment can be looked for only in a special institution. All attempts to treat severe inebriety otherwise are vain.

When are drinking habits so strong and so beyond the control of the individual will that one can say one is dealing with a true pathological ebriosity which demands institutional treatment ? The answer to this question depends in the first instance not on how much alcohol has been consumed, but on whether or not definite psychic changes resulting from the abuse of alcohol can be made out. Under these changes we include not merely such obvious effects of alcohol as delirium tremens, Korsakow's psychosis, etc., but that psychic condition to which we apply the term alcoholism in the narrower sense, viz., a more or less marked weakening of pleasurable and intellectual acts. The recognition of this defect is not easy, and it may be overlooked in the consulting room.

In choosing an institution for treatment one must be assured that, wherever the patient is sent to, no alcohol whatever can be obtained by him.

The first step in treatment is the entire withdrawal of alcohol. This can be effected at once in the great majority of even very severe cases, when the patient is day and night under careful observation. The " abstinence " symptoms even in cases of long-continued alcohol abuse are far slighter than in morphinism. The cases of " abstinence " delirium are relatively so few that they need not be considered practically.

The use of subcutaneous injections of atropine and strychnine are unnecessary when the patient is in an institution ; and according to the majority of English observers, they are outside this insufficient to cure a true inebriate. This holds also as regards the so-called " disgust," " suggestion " and " hypnotic " methods of treatment. The use of narcotic medicines in the place of alcohol cannot be recommended.

The administration of thirst-quenching slightly acid drinks and fruit is to be commended, while strongly-seasoned and indigestible dishes must be avoided.

In cases where institutional treatment is commenced during an outbreak of delirium tremens, in the majority of cases alcohol can be at once entirely withdrawn. But in cases with severe fever symptoms, especially pneumonia, the exhibition of alcohol is for a time justified.

There are no medicines which will shorten the period of motor unrest in delirious cases. Hydrotherapeutic methods require to be used with very great caution on account of the risk of heart failure. Isolation is not to be recommended.

Large supplies of liquid in the form of slightly acidulated water (*e.g.* 1 per cent. solution of sodium acetate with syrup simpl.) are useful. Special care should be taken in acute conditions in chronic alcoholics to avoid the danger of heart failure.

To accustom the alcoholic subject to abstinence one must allow one to one and a half year's detention in an institution.

When the patient returns to his home life one can only look for a permanent cure from the psychic and other effects of alcohol when he remains a strict abstainer. It is important that in the case of those who have been engaged in the drink trade another occupation be found. A. HILL BUCHAN.

AN INVESTIGATION INTO THE MERITS OF THYROIDECTOMY (292) AND THYRO-LECITHIN IN THE TREATMENT OF CATATONIA.

BERKELEY and FOLLIS, *Amer. Journ. of Insanity*, Jan. 1909, Vol. lxv., pp. 415-469.

IN pursuance of Berkeley's hypothesis that in catatonia there is an alteration of thyroid metabolism, Follis performed partial thyroidectomy in ten cases. Eight showed marked subsequent improvement. Berkeley considers that thyro-lecithin is productive of good results if administered in the early stages. The descriptions of the cases are very unconvincing. ERNEST JONES.

Reviews

NEURASTHÉNIE ET NEUROSES. Leur guérison définitive en cure libre. PAUL-EMILE LÉVY. Felix Alcan, Paris, 1909. 4 fr.

IN this book the author lays stress on the fact that all diseases have a physical and a psychical side which vary in their proportions. He warns his readers that in order to get a satisfactory and permanent cure both of these aspects must be treated. He says that two similar lesions in two different people never give rise to the same symptoms, but that they differ according to the manner in which the brains of these individuals have reacted to them. He reports the method by which he educates his patients to resist the small emotional shocks which they are constantly receiving and which are so largely responsible for their ill-health.

He reviews the different methods of treatment in which this education has been attempted. He contends that Dejerine and Dubois are wrong in making isolation, rest and suralimentation the three cardinal points of a system which is applied to all cases. He also points out that they are most likely to have good results in the class of hospital patients where exhaustion, almost certainly, will be found to be a great factor in the disease. In private practice the majority of cases are not under-nourished, and what is really needed is to persuade them to cease thinking about themselves and to expend more energy.

His own method of education consists of two parts. First, he explains to the patient exactly the part that his mind is playing in regard to his symptoms, and he tries to change this attitude of mind. Next he makes him rest comfortably with his eyes closed while he goes over each symptom and insists on its cure. He agrees with Dejerine and Dubois that hypnotism is apt to be harmful, but he claims that by this method he gets all the advantages of hypnotism without its ill effects.

Again, he does not agree with giving milk in large amounts, but thinks that an abundant and simple diet is equally nourishing and avoids the nauseating effects so often seen with milk. Finally, he uses drugs when he considers they are likely to be helpful, again differing from Dejerine.

There are special chapters on hysteria, neurasthenia, spermatorrhœa, pseudo-appendicitis, etc., with illustrative cases.

R. W. LANG TODD.

DER QUERULANT UND SEINE ENTMÜNDIGUNG. FRESE, *Juristisch-psychiatrische Grenzfragen*, Bd. 6, Ht. 8, 1909. Marhold, Halle. M. 1.20.

LEGAL psychiatry is a subject that, except in certain aspects, does not well lend itself to international study, for so many of the artificial conventions on which it rests differ from one country to another. The subject, for instance, of "Querulantenwahn" and its precise relation to dementia præcox is one of psychiatric interest, but in this brochure it is dealt with from a lawyer's standpoint, which is a different matter. The main part of the volume is taken up by a detailed account of a case which is described and discussed in a very able manner. ERNEST JONES.

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S. A. K. Wilson. "A Case of Thrombosis of the Left Posterior Inferior Cerebellar Artery (*Proc. Roy. Soc. of Med.*, Feb. 1909).

Tom A. Williams. "The Importance of Modification of the Sensibility in the Diagnosis of Disease in the Light of Recent Neurological Research" (*Washington Med. Ann.*, vol vii., No. 3).

Brosch. "Die Selbstmörder. Mit besonderer Berücksightigung der militärischen Selbstmörder und ihrer Obduktionsbefunde" (Deuticke, Wien, 1909, K. 7.20).

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Vaschide. "Essai sur la Psychologie de la Main." Marcel Rivière, Paris, 1909, 12 fr.

James Kerr Love. "The Study of the Deaf Child." Alex. Macdougall, Glasgow, 1909.

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Review
of
Neurology and Psychiatry

Original Articles

THE PROTEID CONTENT OF THE CEREBRO-SPINAL FLUID IN GENERAL PARALYSIS.

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THE subject of the proteid content of the cerebro-spinal fluid in general paralysis has received a considerable accession of interest within the past year or so from the discovery of the part played by certain forms of proteid in the Wassermann reaction. Testing for the total proteid present has for some five or six years past been generally recognised as an important step in the examination of the fluid in this disease, but of late it has been seen that the determination of the *kind* of proteid that is increased is a matter not only of diagnostic significance but also one of great theoretic interest in relation to the special substances that are provisionally termed the Wassermann anti-bodies.

The history of the development of our knowledge on the subject may first be shortly described, and the question of technique in examination separately considered. Only the albumin and globulin proteids will be dealt with in this paper. That proteid is a normal constituent of the cerebro-spinal fluid has been known for some forty years. Soon after the introduction of lumbar puncture as a clinical procedure it was found that the amount of proteid is greatly increased (often tenfold) in inflammatory conditions, particularly of the meninges, but that it is increased also in metasyphilitic affections has been generally recognised only within the past half dozen years. The discovery that this increase occurs almost constantly in general paralysis was independently made and published on four separate occasions, and it was not until the last of these—seven years after the first—that general attention was called to the observation. Babcock, in 1896, found that the proteid was pathologically increased in every one of twelve cases of general paralysis he examined, and Nawratzki, in 1897, found the same in six cases. Schaefer, in January 1902, refers to the work of these writers, which he confirmed, and was the first to appreciate the high diagnostic value of the observation. The same conclusion was independently stated in two papers published simultaneously in April 1903, by Guillain and Parant, and Widal, Sicard and Ravaut. The former of these, in reviewing the literature, referred only to a case of tabes, recorded in 1901 by Achard, Loeper and Lanbry, one each of tabes and general paralysis recorded in the same year by Wolf, and to a statement made by Léri, in 1902, to the effect that there was *occasionally* an increase in proteid in cases of metasyphilis; their claim, therefore, that no one prior to them had attributed any diagnostic significance to the observation holds true only so far as French writers are concerned. They found that the increase occurred in the great majority of cases, that it was generally, though by no means always, parallel in extent to the degree of lymphocytosis, and that it bore no definite relation to the stage of the disease. Their conclusions were within a year decisively confirmed by Coriat, Donath, Marchand, Nissl, Schoenborn, Siemerling, Skoczynski and others, and at the present time observation of the proteid present is, of course, a routine step in the examination of the cerebro-spinal fluid. The value of the sign is enhanced by the facts that on the one hand, as Kutner and Liebscher pointed out, the lymphocytosis due to metasyphilis is more constantly accompanied by an increase in the proteid content than is the lymphocytosis due to tertiary syphilis of the nervous system, so that we have here a differential point of considerable value between the two conditions, and on the other hand, as shewn especially by Zilinakis, an increase in proteid may occur in cases of general paralysis at a time when no lymphocytosis is present and may thus supply an important clue to the diagnosis. Rénon and Tixier have similarly reported cases of meningitis in which there was present an increase in proteid but not in the cell count.

The amount of proteid present in normal cerebro-spinal fluid is but small. It is given as 0·25 grammes per litre by Gumprecht, as 0·2-0·5 by Quincke, as 0·2-1·0 by Siemerling, as 0·5 by Léri, and as 0·5-1·0 by Riecken. Some of these figures are based on the examination of the fluid in abnormal conditions, such as of hydrocephalus, spina bifida, etc., and it is doubtful if the amount ever exceeds half a gramme per litre in absolutely normal fluid. In general paralysis the average amount per litre is given as one gramme by Marie and Viollet, 0·9 by Nawratzki, 1·1 by Marchand, 1·6-2·5 by Cimbal, 0·75-3·5 by Schaefer, and 1-3 by Zilinakis. Nissl, without giving absolute figures, finds similar amounts, and Decoubaix says the amount varies up to 2-4 grammes. We thus see that there is commonly four times as much proteid in the cerebro-spinal fluid of general paralysis as in that of the normal. It is thus evident that in this affection the proteid will be manifest to coarser tests than are necessary to detect its presence in the normal. In practice it is found that valuable diagnostic indications may be got from a study of the reaction of the fluid to a few simple tests without the necessity arising of a quantitative estimation being made In such quantitative estimations as have been made the methods employed have usually been Kjeldahl's (Schaefer, Cimbal) or some modification of Esbach's, such as Nissl's (Henkel, Kutner, Nonne and Apelt, Siemerling) or Nageotte's (Rous). Sufficiently accurate information may, however, be obtained by the application of the ordinary tests for proteid, such as heat, nitric acid, or picric acid. In normal cerebro-spinal fluid simple boiling, or boiling after slight acidification, produces only a faint cloudiness. This observation, made first by Hoppe-Seyler, may readily be confirmed, although some authors, including Donath, have maintained that no cloudiness occurs except in cases of general paralysis and tabes. In four cases of non-nervous disease I have found the reaction positive in every examination, though the opalescence is sometimes exceedingly faint. It is advisable, as recommended by Guillain and Parant, to boil the whole of the fluid, two or three centimetres, and not the upper part only, as is usually done. With a little experience it is easy to determine whether the opalescence formed passes beyond the normal limits. A more suitable test, however, is the nitric acid one, applied in Heller's way, so that a ring forms at the junction of the two fluids. This reaction is, in my experience, always positive, in health and disease. By gauging the density and thickness of the ring one can readily appreciate deviations from the normal, and, if necessary, the extent of the deviation can be measured by finding out the dilution of the fluid at which the ring forms only after three minutes' time (Brandenberg's method).

While at first interest was mainly concerned with the question of the amount of total proteid present, of late years increasing importance has been attached to the study of the form of proteid. There is a tendency in present-day physiological circles to retrict the term globulin to a much smaller group of proteids than heretofore, but the definition of globulin afforded by the various salt-solubility tests will here be adhered to as being the better known and therefore more generally comprehensible one.

There is some divergence of opinion as to which form of proteid is present in normal fluid, a fact which illustrates how minimal is the quantity there. Whereas Arthus, Guillain and Parant, Halliburton, Mott, Hoppe-Seyler, Nawratzki, Rénon and Tixier, Sicard, Siemerling and Sollmann state that normally globulin is present but not albumin ; Dircksen, Nonne and Apelt, Rous, Sabrazès and Schoenborn find both forms, and Nissl only albumin. The first-mentioned view is more probably the correct one, for it is based on very exact investigations made by some of the most experienced physiological chemists. At all events, if any albumin be present it must be in exceedingly small amount. Halliburton states further that the proteid consists of serum-globulin, not fibrinogen or cell-globulin, and that it coagulates at 75° C.

In regard to metasyphilis, a similar divergence of opinion prevails as to the variety of proteid present, a fact that is to be attributed to the same cause as in the above case, namely, to the difficulty of deciding the point when the amount of proteid is so small—usually under five grammes per litre. Different results have been obtained by the use of different tests, so that some writers, as Cimbal and Nonne and Apelt, have wisely chosen to state their results empirically in terms of the tests employed, thus abstaining from any expression of opinion as to the nature of the proteid revealed by these tests. All writers on the subject are unanimous on at least one point, namely, that considerable quantities of serum-albumin are to be found in general paralysis. Nissl and Schoenborn are the only two who consider that the proteid present in this affection is mainly albumin, and that globulin is rare. All other workers find that globulin is present in relatively large quantities, and most of them, including Widal, Sicard and Ravaut, Cimbal, Pegna, and Nonne and Apelt, find that the amount of globulin exceeds that of albumin.

This question, however, cannot be considered as being at present decided, and practical interest is confined more to the question as to which tests are reacted to in cases of general paralysis in contrast with the normal. In other words, investigations have been empirically directed towards determining which chemical reactions are the most characteristic of the cerebro-spinal fluid in general paralysis. As will presently be pointed out, there is much evidence to shew that in this disease certain peculiar qualitative changes take place in the proteid present, so that we are encouraged to believe that chemical tests may be found which respond to the changed form of proteid more constantly and characteristically than to the unaltered form present in the normal.

The technique that in this connection has been most widely employed is that introduced for the study of the cerebro-spinal fluid in cases of meningitis by René Monod. It was first applied to cases of general paralysis by Guillain and Parant, and is the one that was used in the extensive studies made by Henkel, E. Meyer, and Siemerling. The globulin is precipitated with magnesium sulphate, the fluid is filtered, and the filtrate heated; a precipitate then indicates the presence of albumin. Widal, Sicard and Ravaut used the same technique, except that they slightly acidified the filtrate with acetic acid before heating it. Cimbal replaced the sulphate of magnesium by that of zinc, and allows it to stand for from four to twenty-four hours before filtering. The precipitate thus obtained he terms Fraction I., and that obtained by heating the acidified filtrate Fraction II.; the former is presumably globulin, the latter albumin.

It is clear from the results given by all these workers that these reactions, though often enough positive in cases of general paralysis, are not sufficiently characteristic to be of any value in differential diagnosis. This was thoroughly demonstrated by Nonne and Apelt, who repeated the various techniques in a large number of cases, and from personal experience I can fully confirm their conclusion. The reactions are frequently given by fluids taken from the most diverse cases, whether these are of a syphilitic nature or not.

In 1904 Nissl replaced the sulphate of magnesium by that of ammonium, finding that he could thus easily get a clear filtrate which could be more accurately tested. As was mentioned above, Nissl obtained a precipitate with ammonium sulphate (indicating the presence of globulin) only very exceptionally. Nonne and Apelt employed the same method, but introduced another standard in that they declared a case positive if cloudiness arose within three minutes after the addition of the ammonium sulphate. This stage they designate as Phase I., and the precipitate subsequently obtained by heating the acidified filtrate as Phase II. They found the Phase I. reaction positive in all cases of general paralysis, and not often in other cases. In a later contribution, Nonne disclaims any contention that the reaction is pathognomonic, but holds that it has considerable diagnostic value.

Last year another reaction was introduced by Noguchi, which he maintains specifically indicates the presence of syphilitic changes. He applies it in examination of both the blood serum and of the cerebro-spinal fluid. When it is positive in the latter then the presence of general paralysis or tabes is very probable, though it is sometimes positive also in cases of tertiary syphilitic affection of the nervous system. The technique of the procedure in the case of the cerebro-spinal fluid is as follows: To 0·1 c.cm. of clear fluid is added 0·5 c.cm. of a 10 per cent. solution of butyric acid in physiological saline. The mixture is heated to boiling, and then 0·1 c.cm. of 4 per cent. sodium hydrate is added, and the mixture again heated to boiling. The test should be carried out without any pause. An opalescence frequently follows even in the normal, but the reaction is considered positive only when peculiar light greyish flocculi occur. This should come about within half an hour, and often does within a couple of minutes. Noguchi holds that the reaction is given only by globulin, and especially by the changed form of globulin present in syphilitic and metasyphilitic cases.

Before relating my personal experiences with these and other chemical tests, I wish briefly to indicate the theoretic interest that the subject has recently acquired ; for fuller information on the matter the reader is referred to a review I have recently published elsewhere. The substances present in the blood-serum of syphilitics, and in the serum and cerebro-spinal fluid of general paralytics, and on which the Wassermann reaction depends, may provisionally be called anti-bodies, though it is now certain that even if they owe their origin to the presence of syphilis, they are not specific anti-bodies in the ordinary sense of the term. They were thought by Levaditi and Yamanouchi to be of a lipoid nature, but more recently they have been demonstrated beyond doubt to be proteids, and, indeed, globulins. Further, thanks to the very careful work of Elias, Neubauer, Porges and Salomon, Gross and Volk, and especially of Noguchi, we now know that the proteid in question is a euglobulin. They possess in a high degree the capacity to bind lecithin, and on their proclivity to produce a flocculent precipitate in lecithin emulsion depends the well-known Porges-Meier reaction for syphilis. Levaditi and Yamanouchi, Bauer, and Gross and Volk have proved that they exist in small quantities in normal blood-serum. In other words, *the Wassermann reaction depends on an increase of some special form of euglobulin that is normally present in the serum.* The reaction is defined by Elias, Neubauer, Porges and Salomon, as an interaction, of the nature of a precipitate formation, between certain hydrophile colloids, notably lecithin and a changed form of globulin. These authors, as well as Pappenheim, Weil and Braun, and Much, consider that in syphilis some change occurs in the globulin which is of too fine a nature to be revealed by the ordinary salt tests. The change is, therefore, both a qualitative and quantitative one, and in the latter connection it is interesting to note that Noguchi has shewn that in syphilis there is a marked increase in the globulin of the blood serum. The source of the added substances in syphilis is not yet known. Weil and Braun find the origin of them in cell disintegration, Pappenheim and Marie and Levaditi in white corpuscles ; this would agree with Feuillé's suggestion that the increase of the proteid of the cerebro-spinal fluid in metasyphilis is due to leucolysis.

We therefore see that it is highly probable that in syphilis, and especially in metasyphilis, there is a considerable increase in some particular form of euglobulin, and that in this euglobulin is contained the "*anti-body*" which is responsible for the positive reaction in the Wassermann test. Noguchi claims that the existence of this increase is better demonstrated by his test, carried out as described above, than by any other. The test was discovered quite empirically by experimenting with a number of allied methods. With the cerebro-spinal fluid taken from patients with general paralysis he obtained a positive reaction in thirty-seven cases out of forty-three. These results were published in January of this year, and in the same month Dr G. W. Ross and I published an account of the examination by the same method of fifteen syphilitic and ten non-syphilitic cases. Of the former cases we found the Noguchi test positive in three cases of tabes, five of general paralysis, and four of tertiary syphilis of the nervous system; it was negative in three cases of syphilis under treatment, in one of which the nervous system was implicated. Of the ten control cases the test was negative in all, with the exception of one case of tubercular meningitis. We found it advisable to view the test-tube by reflected light, and have had constructed a box blackened on the inside into which the test-tube and a glazed electric bulb may be inserted. The fluid can then be viewed through a lateral opening, and the light nicely controlled. This device is useful in other similar tests in which it is necessary to determine the presence of slight cloudiness, of a faint ring, etc.

Since this time I have been able further to apply the test in two cases of cerebro-spinal lues, in one of which it was positive, in ten cases of general paralysis, in all of which it was positive, and in four cases of dementia præcox, in all of which it was negative. Up to the present, therefore, I have tested the reaction in fifteen cases of general paralysis, and have always found it positive. Apart from metasyphilis, I have not found the test positive in any chronic disease, except sometimes in tertiary syphilis of the nervous system (gummatous meningitis, diffuse cerebro-spinal lues, etc.).

Recently Gay and Fitzgerald have recorded the results of

Noguchi's test with the cerebro-spinal fluid in thirty-three cases. It was positive in eight cases of general paralysis, one of diffuse cerebro-spinal syphilis, and thirteen out of fourteen cases of syphilitic disease of the meninges. It was negative in two cases of congenital syphilis and eight non-syphilitic cases. I can confirm their conclusion that the test is positive in cases of syphilis of the nervous system far oftener than the Wassermann reaction, so that it is of much less aid than the latter in enabling one to distinguish between general paralysis and cerebro-spinal syphilis. It is chiefly of value in connection with the diagnosis between general paralysis and other non-syphilitic mental affections.

Noguchi considers that the test is a much sharper and clearer one than the Nissl-Nonne ammonium sulphate one described above. In my experience this is certainly true, and I would attribute the conflict between the results recorded by Nissl and those recorded by Nonne and Apelt to the difficulties of the test they employed. It seems to be much less delicate an indicator of small quantities of globulin than either the Noguchi test or the one now to be described. This consists in modifying the Nissl-Nonne test so as to perform it in the same way as the Heller test. The fluid is taken up in a fine pipette, and allowed gently to flow on to the surface of the ammonium sulphate solution. The solution must be quite saturated, and this is best attained by dissolving the salt in boiling water, and keeping an excessive amount of salt in the vessel containing the solution. Care must be taken that the salt is pure, so that the solution is neutral in reaction. When the test is positive a ring forms at the junction of the two liquids. The ring is rather characteristic in having a clear white appearance, and, in being fine, compact and sharply cut. After about half an hour it assumes a mesh appearance as of a delicate cobweb. It must be viewed in an indirect light. Some idea of the quantitative intensity of the reaction can be obtained by the Brandberg method—that is, by forming a standard estimate according to the length of time before the ring appears; the fluid can be tested for this purpose at different dilutions. It is hard to say what are the actual physical conditions present at the junction of the two liquids. It may well be that penetration of the ammonium sulphate solution occurs so gradually as to permit the formation of a layer in which the concentration is only a third—namely, the concentration which is most favourable for the precipitation of euglobulin as distinct from other globulins.

The results obtained by the ring test agree almost exactly with those obtained by Noguchi's test, and it offers the advantage of being more readily applicable. It is never positive in the normal, and up to the present I have never found it positive in any chronic affection except active syphilis, or metasyphilis, of the nervous system. The cases mentioned above, therefore, need not be again enumerated.

SUMMARY.

An increase in the globulin content of the cerebro-spinal fluid almost invariably occurs in general paralysis; the proteid concerned is a euglobulin. A peculiar qualitative change takes place in this euglobulin, and is associated with the formation of the "anti-body," which is the active agent in the Wassermann reaction. It is here maintained that the two most accurate tests for this euglobulin are the Noguchi butyric acid test and the ammonium sulphate ring test above described. These tests are of the greatest value in distinguishing general paralysis from non-syphilitic affections of the nervous system.

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ON THE WASSERMANN REACTION, AND ESPECIALLY ITS SIGNIFICANCE IN RELATION TO GENERAL PARALYSIS.[1]

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THE discovery by Schaudinn of the Spirochæta Pallida was the starting-point of an extensive series of investigations which have thrown much light on the nature of syphilitic infection and its consequences. Reliable authorities are agreed as to the ætiological relationship between this organism and syphilitic disease, and its presence can, with ease, be demonstrated in chancres, syphilides and the tissues of cases of congenital syphilis. In tertiary lesions its presence has been noted in gummata and in aortitis, though only in a very few cases. In the so-called para-syphilitic diseases it has not yet been seen. If it be the case that the presence of the organism be indispensable to the production of tertiary and para-syphilitic lesions, the difficulty of demonstrating it may be due to one or both of the following causes:—(1) the organisms may be present in another form representing a different stage in their life cycle; or (2) they may be so few in number as to render demonstration extremely difficult, as is the case with the tubercle bacillus in the lesions of chronic fibroid phthisis. The difficulty consequent on a paucity in numbers may be enhanced by difficulty in staining. Two methods of staining the spirochæte are in use—Giemsa's stain for film preparations and a silver impregnation method for the examination of tissues. It is a remarkable fact that tissue which shows enormous numbers of silver impregnated organisms, may show very few, or none at all, in the films stained by Giemsa's method; while, on the other hand, we have noted an extreme variability in the extent to which impregnation by silver may be obtained; for example, if the tissues of a syphilitic infant be fixed soon after death, and while still in a very fresh state, impregnation may be very slight in some parts and distinct in others; if one takes the case of a syphilitic pneumonia, the organisms in the fresh proliferating pneumonic tissue are not seen or are represented by delicate spirals which are recognised with difficulty, while in the desquamating and degenerating epithelium of the bronchi they may be much more distinct. It is, on the other hand, a striking fact that the spirochætes in a syphilitic fœtus, which has been dead for some time, are usually impregnated easily with silver, and this is in accord with other observations in the use of the silver impregnation method in demonstrating structures.

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[1] We have pleasure in recording our indebtedness to the Carnegie Trustees for a grant in aid of the expenses connected with the experiments on which the observations in this communication are founded. We have also to thank Dr Carswell and Dr Marr for permission to examine cases in Duke Street Hospital and Woodilee Mental Hospital.

The conclusions based on the demonstration of the spirochæte in the lesions of syphilis have been amply substantiated by experimental work. The organisms have been demonstrated in the lesions of experimental syphilis in monkeys; they have been inoculated into the cornea of the rabbit and transmitted through a series of these animals, after which the introduction of infected cornea beneath the eyelid in apes led to syphilitic infection in which spirochætes were present. Hoffmann has succeeded in inoculating an ape with the cerebro-spinal fluid of a man suffering from a papular syphilide.

Not less important than these discoveries is the fact that chemical changes peculiar to syphilis may be demonstrated in the blood serum of those suffering from syphilitic or so-called para-syphilitic disease. The evidence of such chemical change consists in this, that syphilitic serum in the presence of an alcoholic or watery extract of liver or other tissue rich in lipoid substances, is capable of inhibiting the action of hæmolytic complement. This is shown by placing a mixture of the patient's serum and organ extract in contact with the complement (fresh guinea-pig serum) for one and a half hours at 37° C., and subsequently adding red blood corpuscles adequately sensitized beforehand by the addition of the homologous immune serum. Absence of lysis in the added corpuscles after further incubation for an hour at 37° C. constitutes a positive reaction, and indicates that the serum proceeded from a case of syphilis. It may be added that while lipoid compounds are probably the active agents in the organ extract, on the other hand nothing is known as to the nature of the substances in the serum (or cerebro-spinal fluid) which give rise to the reaction. Fresh normal human serum in the presence of organ extract may possess the property of deviating complement to a slight extent, but this is abolished by heating for half an hour at 55° C., while in the great majority of syphilitic sera (80 per cent. to 90 per cent.) the property is still present after such treatment. The reaction was at first considered by Wassermann and his collaborators to depend upon the receptors of the spirochætes in syphilitic liver acting in conjunction with specific anti-bodies in the syphilitic serum. It has, however, been established that the effect is not due to the presence of the specific syphilitic antigen, but that a great variety of lipoid compounds may serve to produce a similar result along with syphilitic serum. Thus the reaction is not a specific one in the usual biological sense of the term.[1]

It has been pointed out that in the very early stages of syphilitic infection the complement-deviation test may be negative. The earliest cases which we have examined were three in the second month of the chancre, and all were positive; Levaditi, Laroche and Yamanouchi state that the reaction becomes notable from the fifteenth to the thirtieth day after the appearance of the primary sore. Practically every case in the second stage with constitutional signs gives a positive result. In the latent period —that is, in cases where there is a history of syphilis but no symptoms—there is a negative reaction in 50 per cent. to 70 per cent. In the later stages of the disease, in gummata, and in the para-syphilitic affections the serum reaction can again be obtained in practically every case at some stage of the condition; in thirty-two cases with gummata we have found a positive reaction in thirty-one, and in thirty-four cases of clinically diagnosed general paralysis only two have been negative; these negative cases of general paralysis were examined early in the course of the disease, while all the others were examined at a later stage, and this accords with the general finding that in advanced cases the amount of deviation is very considerable. The important point, then, is that the reaction does not become apparent until some time after the appearance of the primary sore; in the secondary or acute stage it is usually present; in the latent period it is often absent; while in the tertiary and advanced para-syphilitic conditions it is usually present. It is only in cases of locomotor ataxia and general paralysis that the cerebro-spinal fluid has been found to give the reaction. The substance or substances in the serum which give rise to the reaction are peculiar to syphilis. This is true at least as far as the diseases common to this country are concerned. In the blood serum, however, of cases of *trypanosomiasis* and *framboesia* such changes may occur; the constancy and the degree of the reaction in these latter conditions is, however, unknown, but that it does occur is certain.

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[1] For details of the method employed in carrying out the Wassermann reaction, see M'Kenzie, and Browning and M'Kenzie, *Journ. of Path. and Bact.*, vol. xiii., 1909, also *Zeitschr. für Immunitätsforschung*, vol. i., orig., 1909.

With regard to the significance of the deviation reaction, it must be admitted that it is as yet impossible to say whether or not the fact that a serum yields a positive result is a proof of the presence and pathogenic activity of living organisms in the host. The frequent absence of the reaction in the latent period, its absence in some cases of early general paralysis, and its notable presence in the later stages might be explained on the hypothesis that some intercurrent condition may call from abeyance into renewed activity metabolic processes which were originally set up as the result of the syphilitic infection.

With reference to trypanosome infection it is now accepted as a fact that sleeping sickness or negro lethargy and trypanosome fever are different phases of the same disease. The infection with trypanosomes is conveyed by a biting fly (Glossina palpalis), which carries the parasite from one host to another. The various stages of the disease cannot be sharply demarcated; the first stage, or latent period, which includes the time that elapses between the bite from the fly and the first appearance of symptoms, is very variable, and may be anything up to seven or eight years; in this prodromal stage the presence of organisms can usually be demonstrated by examination of the blood or the juice of the lymph glands; the occurrence of some change which disturbs the relation of mutual accommodation between the parasite and its host would apparently give rise to the second stage known as trypanosome fever. The onset of this second stage is marked by severe headache and attacks of fever resembling malaria; transient œdema of the face or limbs may be accompanied by a rash of erythematous, urticarial or erysipelatous character; the spleen is usually swollen; in this stage the organisms are easily recovered from the blood or lymph glands. Following this phase there may be apparent recovery, or, after months or years of well-being, the third stage known as sleeping sickness may supervene. The symptoms here are slight at first, and the progress of the condition is slow. Disinclination to work, exhaustion on slight exertion, and slight transient œdema of the face may be the first signs; the nervous changes, however, gradually assert themselves in a more definite manner; a previously industrious and reliable worker may become careless and unreliable, and a cheerful and happy disposition may give way to a morose and melancholy turn of mind; acute maniacal attacks are not infrequent; there is marked tremor of the tongue, the speech may be stuttering or staccato, and there is difficulty in pronunciation. According to Mense, the clinical picture of the disease presents features which are fairly constant, more so in young people than in adults, and in negroes than in Europeans. He points out that in this stage also, after symptoms have become pronounced, a period of apparent well-being, it may be for months, may ensue; on the other hand, the natural course of the disease may be interrupted by epileptiform attacks, convulsive seizures of laughing and weeping, and periods of great talkativeness. Hallucinations of various kinds may be present, and attempts at murder or suicide have also been noted. In the great majority of cases, if not in all, the disease progresses to a fatal issue; the appetite, which was at first good, gradually diminishes, and the patient, falling into long periods of sleep, loses flesh, develops decubitus, muscular contractures and abscesses, and dies, perhaps as the result of the secondary infections to which his weakness and decubitus have exposed him. The great similarity to general paralysis is thus evident.

Coming now to the anatomical side of the question, not only is there a polyadenitis in early trypanosomiasis as in early syphilis, associated with the presence in the lymphatic tissue of trypanosomes on the one hand and spirochætes on the other, but the lesions in the brain are similar in both cases—in the stages of sleeping sickness and general paralysis. Further, it is to be noted that there is a great similarity in the character of the lesions in all stages of syphilitic infection; in primary, secondary, and tertiary, and also in para-syphilitic lesions there is infiltration of plasma cells and lymphocytes with marked perivascular arrangement. This perivascular exudate of lymphocytes and plasma cells, which was thought to be pathognomonic of general paralysis, is now acknowledged to be a constant feature of late trypanosome infection. It is an interesting fact that in the *mal du coit* of horses an ataxic paraplegia occurs with posterior root-degeneration and sclerosis of the posterior columns of the cord; and Spielmeyer, by experimental trypanosome infection of dogs, has produced optic atrophy and a lesion of the posterior columns of the cord simulating the ataxic lesion.

Reviewed shortly, the points of resemblance between trypanosomiasis and syphilis are as follows:—

1. In trypanosomiasis the infective agent is a protozoon, and this is probably also the case in syphilis; both diseases may be transmitted to animals.

2. In experimental trypanosomiasis it is possible to demonstrate a change in the blood serum resembling that found in syphilitic and so-called para-syphilitic disease (the Wassermann reaction).

3. There is a considerable similarity as regards early lymph gland involvement, early febrile and constitutional disturbance

with exanthemata, periods of latency, and late involvement of the central nervous system.

4. The cellular characters of the lesions are similar in both cases; lymphocytes and plasma cells play a prominent part in the reaction, and the perivascular proliferation in general paralysis closely resembles that seen in sleeping sickness.

The failure to demonstrate the organism of syphilis in general paralysis constitutes the missing link in the chain of comparison; though the similarity of the anatomical changes in sleeping sickness and general paralysis and the association of the former with the presence of trypanosomes in the cerebro-spinal fluid strongly suggests the possibility that the syphilitic virus is an active agent in the production of para-syphilitic disease.

Mott has recently brought the older theories concerning general paralysis into line with modern investigation. He has shown that the clinical observation of "no syphilis no tabes" has been strongly supported by the biochemical test, and he attempts to show how the substances which are supposed to interact in this test are related to the substances concerned in the breaking down of the nervous system. He takes his stand on the hypothesis that general paralysis means a premature decay of certain neurons, brought about by damage received in the early syphilitic attack, since it has been supposed that "the nerve elements being perpetual and having acquired a habit of increased metabolic activity, will continue it during life and will contribute to the excess of lipoids in the blood," and he advances the theory that it is in virtue of the entrance of the products of the degeneration of nervous tissue into the blood and cerebro-spinal fluid that they yield the reaction. It must, however, be borne in mind that while increased dissimilative metabolism occurs in many diseases, it is only in syphilis, trypanosomiasis and framboesia that a positive Wassermann reaction has up till now been demonstrated; and this is true whether the reaction depend on the quantitative or the qualitative character of the substance or substances involved.

Now, if it is to be suggested that the contagium vivum of syphilis is still active in general paralysis, we must inquire what interpretation is to be put on certain outstanding features of the disease in the light of such an hypothesis? Let us consider the following four points:—

1. The immunity of general paralytics to syphilitic reinfection; 2, the latent period between syphilitic and so-called para-syphilitic disease; 3, the distribution of the lesions in para-syphilitic disease; 4, the resistance to anti-syphilitic treatment.

1. Mott, as the result of a very large experience, observes that he has never seen or had his attention called to a case of general paralysis showing a primary sore or a secondary rash, notwithstanding the fact that such subjects are likely to be more than ordinarily exposed to infection. It is quite a natural assumption, from such observations, that the general paralytic is immune to syphilis, and such a conclusion may be supported by the results of Krafft Ebing's experiments, in which he failed to inoculate, with the virus of a typical hard chancre, nine cases of general paralysis which gave no history, and showed no signs of syphilis. On the other hand, such observations are equally explicable on the assumption that the patient still harbours the organism of the disease; as Neisser has shown experimentally, if the spirochæte be still present, reinoculation is impossible; and the contention that, in the absence of the spirochæte, reinoculation could be effected, is supported by the findings of Neisser, Browning, and others who, working on the experimental side of syphilis and trypanosomiasis, point out that immunity to these infections is short-lived.

2. The occurrence of the latent period has been explained on the assumption of an acquired immunity, but here the meaning of the term must be made clear. Immunity may be taken to mean either absence of symptoms (immunitas non sterilisans of Ehrlich), or insusceptibility to reinfection after the causal agent has been destroyed. The early and judicious administration of drugs may cause a rapid and complete disappearance of the symptoms in syphilis without killing the organisms, as may be seen by the reappearance of the disease after months or years; and in the case of the mother who gives birth to a number of syphilitic children without herself showing any symptoms, it would be a grave assumption to suppose that she does not harbour the virus. The probability that the virus may remain latent for long periods is strengthened by knowledge of the fact that tubercle may lie dormant for years without manifesting any evidence of its presence, its activity being called

into play by some supervening circumstance which disturbs the balance of accommodation between organism and host; thus an attack of measles, influenza, or trauma are not the causes of tubercular infection; they are the conditions which give rise to disturbed relations between the patient and the organism, which may have already been present for some time. We have made similar observations in the case of cerebro-spinal fever, where a blow on the head would seem to have been the determining factor in the production of the acute manifestations of the disease. In a recent address, Sir Hector Cameron has called attention to the occurrence of such latent periods extending from twenty to thirty years in cases of cancer; he also emphasises the recrudescence of pyogenic disease in the abdomen after periods of well-being. It is a well-recognised fact that after typhoid fever the bacilli may persist in the body for years without giving rise to trouble, but that conditions may supervene at any time leading to an osteomyelitis or cholecystitis, in which the typhoid bacillus is the only organism concerned. In the case of the latent period in syphilis occurring between the syphilitic and para-syphilitic symptoms, it is not too much to suppose that the contagium vivum is still present in a state of accommodation with its host, but capable of giving rise to further disturbances on the occurrence of changes depending on external or internal agencies. With reference to the occurrence of inherited general paralysis, it is doubtful whether, accurately speaking, such a condition is possible. It is more reasonable to suppose that the so-called inherited general paralysis is the result of syphilis acquired in utero; in many of the reported cases it is stated that there was evidence of congenital syphilis; and in those cases in which there was no evidence, it is possible that the organism was present in a state of accommodation to its host, so far as the ordinary manifestations of syphilis were concerned. In any case, it is unlikely that the neuron degeneration acquired in one generataion, as a result of syphilitic infection, could be transmitted to the offspring in the absence of the pathogenic agent.

3. Another point adduced in favour of the para-syphilitic, as opposed to the syphilitic, origin of general paralysis, has reference to the definite distribution of the lesion. It is maintained that a definite distribution of the lesion is inconsistent

with a generalisation of the virus. As against this it might be said that there are many conditions in which a selective action of certain tissues for specific poisons is universally recognised. Why is it that drop-wrist occurs in lead poisoning, why is it that tetanus toxin has a selective action as a stimulant especially of the motor cells in the spinal cord, why does diphtheria toxin produce vagus paralysis? To say that these elements have a specific affinity for a particular toxin is only to state the obvious. The cause of such affinity has not been explained, but it is an incontrovertible fact that generalisation of virus is not incompatible with localisation of lesion.

4. It has been argued that the failure of response to anti-syphilitic treatment is evidence in favour of the view that general paralysis is not a true syphilitic disease. There is, it is said, an increased irritability and functional activity of the neurons, whereby lipoid complexes are thrown off in increasing numbers. "The uselessness of anti-syphilitic remedies would thus be accounted for," and it is Mott's experience that they are positively injurious in true tabes and general paralysis, "because they lower the vital energy of a system which has over-immunized itself against the syphilitic virus." We have already referred to the reasons whereby the general paralytic cannot be reinfected with the syphilitic virus, and the possibility must be borne in mind that the virus may have become serum-resistant or drug-resistant, a condition which is well known in experimental trypanosomiasis. There is also good reason for believing that such resistance may be more readily developed in one individual than in another (Browning). Again, it may be that the anti-syphilitic treatment is not effective in general paralysis on account of the site of the lesion. In investigating the pathology and treatment of cerebro-spinal fever, M'Kenzie and Martin pointed out that the immune substances, elaborated in defense, and present in the blood serum, could not be detected in the cerebro-spinal fluid. On the strength of this observation they recommended and tried with apparent success in a considerable number of instances the local introduction of an immune serum. In two severe cases the patients were successfully treated by the intra-spinal injection of their own serum. The general principle relative to cerebro-spinal fever has been substantiated by Flexner, Kolle and others, and now the intra-spinal treatment of this

disease is universally recognised as the most efficacious. It is not only in the case of bacterial anti-bodies that this condition with regard to the impermeability of the spinal membranes holds good; it has been found, for example, that in sleeping sickness potassium iodide does not pass into the cerebro-spinal fluid from the blood stream. It is quite possible, then, that in the case of general paralysis it is not the nature but the site of the lesion which is responsible for the failure of the anti-syphilitic treatment.

It has been the object of this review to indicate that the independence of syphilitic and para-syphilitic infections has not yet been established, and to suggest that, on the one hand, further search for the contagium vivum of syphilis in the body during the stage of general paralysis is necessary, and that, on the other, a line of treatment might be adopted on the supposition that the disease is the manifestation of an active and progressive process. On the advice of Dr Andrew Balfour, of Khartoum, an attempt is to be made to treat sleeping sickness by the intra-spinal injection of the patient's own blood serum, after the organisms have been driven from the blood by the remedial agencies which are now employed. In consideration of the hopeless character of general paralysis a trial of this same method might be recommended, and here also the principle of combined therapy should be borne in mind.

Abstracts

ANATOMY.

THE MEANS OF DISPLAYING, BY ORDINARY DISSECTION, THE LARGER TRACTS OF WHITE MATTER OF THE BRAIN IN THEIR CONTINUITY.
(293) E. B. JAMIESON, *Journ. Anat. and Physiol.*, April 1909, p. 225.

A PLEA for the resuscitation of dissection is put forward, and the advantage of dissection over section is touched upon. Attention is drawn to the fact that although the present-day mode of examining the brain is by section, yet dissection was employed very successfully during the first half of the last century. Various authors of that period whose works were illustrated by drawings of very meritorious dissections are cited, and examples of their preparations are mentioned.

The methods employed by the author in the preservation and hardening of the brains and the preparation of the specimens are explained. Two illustrations are given as types of dissections. Both show the main projection system of fibres from the corona radiata to the pyramid—the one from the external aspect of the brain, the other from the internal. The two specimens are briefly described and explained. AUTHOR'S ABSTRACT.

THE TECHNIC OF STAINING OF THE MEDULLARY SHEATHS.

(294) **(Zur Technik der Markscheidenfärbung.)** PAULA MEYER, *Neurol. Centralbl.*, April 1, 1909, S. 353.

THE object of the author's investigations was to determine which is the best of the many modifications of Weigert's classic method of demonstrating the medullary sheaths. As the differentiation is frequently too strong and the most delicate fibres are decolourised, the test adopted was—do the finest fibres, after a prolonged differentiation, remain deep blue on a clear ground ?

The steps of the method chosen are the following :—

1. The tissue is hardened in 5 per cent. bichromate of potash solution frequently changed, and is embedded in celloidin.
2. The sections are placed for at least twenty-four hours (small blocks for forty-eight hours) in the following solution at 37° C. :—solution of cupric acetate, 50 parts ; acetic acid, 50 parts ; chromium fluoride, 25 parts ; and distilled water, 1000 parts.
3. Rinsed in 70 per cent. alcohol.
4. Transferred for twenty-four hours or over-night to a stain composed of equal parts of solutions *A* and *B* mixed thoroughly just before use.
   A. Hæmatoxylin solution (hæmatoxylin, 1 ; alcohol, 9), 10 parts ; alcohol, 96 per cent., 90 parts.
   B. Liquor ferri sesquichlorat. Pharm. germ., 4 per cent. watery solution.
5. Rinsed in water and differentiated in the standard borax and ferricyanide of potash solution—used at first very weak.
6. Washed in water frequently changed, and allowed to stand for at least twenty-four hours in water with a few drops of lithium carbonate.
7. Then alcohol 70 per cent., alcohol 96 per cent., carbol-xylol 1 : 3, xylol, canada balsam. JAMES W. DAWSON.

PHYSIOLOGY.

THE RELATIONSHIP OF THE MEDULLA OBLONGATA TO (295) THE PUPIL. (Die Beziehungen der Medulla oblongata zur Pupille.)

BACH u. LOHMANN, *Klin. Monatsbl. für Augenheilk.*, März 1909, S. 268.

THE authors undertook experiments on cats to test the observations of Bach and Meyer on the relationship between the medulla and the pupil, which had been questioned by Bumke and Trendelenburg.

In some cases these observations were confirmed: exposure of the fourth ventricle produced a marked miosis, and once a moderately dilated pupil with loss of light reaction followed a puncture at the point indicated by Bach and Meyer at the spinal end of the fourth ventricle. When the light reaction was absent or impaired, it could be restored or permanently improved by a puncture in the centre of the ventricle.

In other cases results were obtained which were not in accordance with the conclusions of Bach and Meyer.

The expected results—miosis, loss of light-reaction, and persistent removal of existing loss of light-reaction—sometimes failed to occur, and the two first-mentioned signs occasionally occurred without any interference with the medulla or its neighbourhood, in one case after partial removal of the periosteum from the cranium, in another after trephining over the cerebrum. In the latter the miosis and loss of light-reaction were only temporarily abolished by a puncture at the cerebral end of the fourth ventricle.

The authors were unable to discover the explanation of these results. They reject the suggestion of Bumke and Trendelenburg that the anæsthetic may influence the production of the miosis and loss of light-reaction observed by Bach and Meyer, and are suspicious but undecided in regard to shock as a possible factor. They conclude that, as far as the cat is concerned, the conditions are so complicated that present observations only doubtfully support the presence in the medulla of physiologically important centres for the pupillary reflex, and that the problem is not likely to be solved by experiments on this animal.

H. M. TRAQUAIR.

IS THE PITUITARY GLAND ESSENTIAL TO THE MAINTEN- (296) ANCE OF LIFE?

LEWIS L. REFORD and H. CUSHING, *Johns Hopkins Hosp. Bull.*, April 1909.

THE authors by their experimental observations on canines have aimed at testing the truth of Paulesco's assertion that total extirpation of the gland is incompatible with the prolongation of life. Out of twenty operations five were unsuccessful; of the remaining fifteen the majority of the animals within a few hours were able to walk unsteadily about the room, and within six hours drank the water and milk which was sparingly given. Usually before the second day they would become lethargic, would pass into a comatose state with a striking incurvation of the spine, and would have a slow respiration with a long-drawn inspiratory act, a feeble pulse, a limp musculature and a subnormal temperature. The transition from this deep coma to death was almost imperceptible, and unattended by a struggle of any kind. As a result of these observations the authors sustain Paulesco's contention, and point out that the surgery of the hypophysis must be limited either to the removal of tumours, which may implicate the pituitary, or, in case of hypertrophy, to a partial hypophysectomy. D. K. HENDERSON.

PATHOLOGY.

REGENERATIVE PROCESSES CONSEQUENT ON ASEPTIC INJURIES OF THE CENTRAL NERVOUS SYSTEM. THE MEDULLA AND THE OPTIC NERVE.

(297) **(Processi rigenerativi e degenerativi conseguenti a ferite asettiche del sistema nervosa centrale. Midollo Spinale e nervo ottico.)** OTTORINO ROSSI, *Riv. di Pat. nerv. e ment.*, Vol. xiii., F. 11.

THE regenerative and degenerative processes incidental on aseptic lesions of the nervous system were investigated in young animals—in rabbits aged twenty to forty days and puppies from one to two months old. Aseptic section of the optic nerve in its intracranial course was practised, and in other cases section of the spinal cord.

The author found that after aseptic section in the spinal cord the nerve fibres of the white substance exhibit rapid and active regeneration. Young fibres arise which traverse the degenerating area without being involved with any particular cells, and then proceed to burrow into the connective tissue substance of the scar. Later on, however, the supporting elements of the white substance tend to undergo degeneration, and build up tumour-like masses of degenerated cell substance in the vicinity of the wound in which the newly regenerated fibres undergo degeneration.

After intracranial section of the optic nerve the fibres which are in connection with the retinal cells show during the first month marked regenerative activity. Regenerative processes also appear in the central stump, but the regeneration cannot be considered to occur in those fibres which have been cut off from their retinal cellular element. The observations were only carried out till the twenty-second day following the operation. F. GOLLA.

ON THE REGENERATION OF THE OPTIC NERVE. (Sulla (298) rigenerazione del nervo ottico.) O. Rossi, *Riv. di Pat. nerv. e ment.*, Vol. xiv., F. 4.

In a previous paper the degeneration and regeneration following intracranial section of the optic nerve had been followed up in young animals to the twenty-second day after operation. The present observations are on a rabbit seven months after intracranial section of both optic nerves. There was some evidence of the persistence of the regenerating fibres observed in previous experiments twenty-two days after operation, but these were not found in the cicatrix or the central stump, only in the distal stump. The question remains open whether the regenerating fibres found in the proximal stump and the cicatrix in other animals in the former paper had been present in this case and subsequently degenerated. The number of experiments is insufficient. The formation of chains of cells in the process of regeneration can with certainty be excluded. F. Golla.

INVESTIGATIONS AS TO THE SOURCE OF THE COMPOUND (299) GRANULE CORPUSCLES OF THE CENTRAL NERVOUS SYSTEM. (Untersuchungen über die Herkunft der Körnchenzellen des Zentralnervensystems.) Fritz Marchand, *Ziegler's Beit. z. pathol. Anat.*, Bd. 45, H. 2, 1909, S. 161.

The author gives a short summary of the more important views that have been expressed as to the source of the compound granule corpuscles. He then gives an account of his findings in ischæmic softening (one case), in secondary degeneration (five cases), and in multiple sclerosis (three cases), and sums up his conclusions as follows:

The products of the breaking up of the myelin sheath in degenerative processes in the central nervous system are mainly absorbed and removed by glia-cells, which during this process become compound granule corpuscles. In severe lesions (especially after injuries) involving all the elements of the nervous tissue, cells of connective tissue origin probably also take on a phagocytic action. The polymorphonuclear leucocytes play a quite subordinate part in removing the products of degeneration. In ischæmic softening of the brain the great majority of the compound granule cells are certainly of glial origin. In secondary degeneration of the cord and in multiple sclerosis they are exclusively derived from glia cells.

During the transformation of the glia cell into the compound granule corpuscle the cell body enlarges, the cell itself loses its connections with the glia-reticulum, and acquires independent locomotory and phagocytic powers. The manner in which the fat granules enter the cell varies. In multiple sclerosis they are all in a state of fine division. In secondary degeneration and in foci of softening the debris of the myeline may be absorbed as large irregular masses. ALEXANDER BRUCE.

ON A NEGATIVE RESULT OF INVESTIGATION FOR PERIVASCULAR INFILTRATION IN THE CENTRAL NERVOUS SYSTEM OF ALCOHOLISED RABBITS.

(300) **(Di un reperto d'infiltrazione perivascolare nel sistema nervoso centrale di conigli alcoolizzati.)** CARLO REICHLIN, *Riv. Speriment. di Freniatria*, f. 1-2, 1908, p. 63.

THE author, in a first series of experiments, noted the absence of perivascular plasma-cell infiltration in the nervous system of alcoholised rabbits. The method used was similar to that of Montesano (see *Rev. Neurol. and Psychiat.*, No. 1, 1908, p. 28), who, however, found in four rabbits such infiltration of the cortical vessels. In order to confirm or refute Montesano's observations, the author repeated his former experiments, with, again, a negative result. As this agrees with the findings of Nissl, Alzheimer and others, he feels justified in drawing the conclusion that an intercurrent infective disease—*e.g.* pleuro-pneumonia—caused the death of Montesano's animals, and that plasma-cell infiltration is found in alcoholism only when another intoxication or infection is superadded.

The presence of plasma cells is regarded by the author as the expression of an inflammatory or infective process and not as a pathognomonic sign of general paralysis. This conclusion, he says, explains their absence in alcoholism, where the vessel walls show chiefly regressive changes, and their presence in various forms of tubercular diseases, in purulent encephalitis, in the neighbourhood of foci of softening and of malignant tumours, especially carcinoma, and in other conditions. JAMES W. DAWSON.

ON NODULAR NECROSIS IN THE CEREBRAL CORTEX.

(301) **(Ueber "drusige Nekrosen" in der Grosshirnrinde.)** G. OPPENHEIM, *Neurolog. Centralbl.*, 1909, p. 410.

IN 1907 Oskar Fischer described certain peculiar pathological appearances in the cerebral cortex of patients suffering from senile dementia, appearances which he named " nodular necroses," and regarded as identical with Redlich's miliary sclerosis. These nodular necroses Fischer maintains to be characteristic of senile dementia. Around them he found peculiar club-shaped proliferations of the neuro-fibrillæ. The nodules themselves, he inclined to think, might perhaps be microbic in origin, somewhat resembling the products of streptothrix growth.

Oppenheim has examined a number of senile brains, and in the main confirms Fischer's observation. He found the "nodules" only in the cortex of senile brains: they were not observed in cases of paralytic dementia nor of non-senile psychoses. Of fourteen senile brains he found that six showed "nodular necroses." Out of six cases of senile dementia the nodules were present in three. (It is not quite clear from Oppenheim's paper whether these three cases are included in his initial six positive cases.) In four cases out of six the nodules were chiefly distributed in the cortex of the frontal lobes: in the remaining two cases they were mostly in the left temporal lobe — both these cases having had symptoms of temporal-lobe affection during life.

Inasmuch as Oppenheim found nodular necroses in the brains of non-demented senile patients, he does not agree with Fischer in regarding them as pathognomonic of senile dementia. Oppenheim further regards the club-like fibrillar proliferation as glial in origin rather than neuro-fibrillar, whilst the nodules themselves he considers not as microbic products but as limited areas of dead tissue. PURVES STEWART.

BLASTOMYCOTIC LESIONS OF THE BRAIN. LE COUNT, *Journ. of Nerv. and Ment. Dis.*, March 1909, p. 144.
(302)

A SHORT general review of the subject is here given. The author states that such lesions are not very rare. ERNEST JONES.

OBSERVATIONS ON THE HISTOLOGY OF THE HUMAN LABYRINTH IN MENINGITIS. SYDNEY SCOTT, *St Bartholomew's Hosp. Reports*, 1909, p. 113.
(303)

THIS paper contains short accounts of four cases of meningitis following otitis media and labyrinthitis: the inner ears were investigated histologically after decalcification and embedding in paraffin, but the details of the method are not stated: the only references are to the other writings of the author.

CASE I.—Died of serous meningitis with distension of the ventricles following labyrinth suppuration: bacteriological examination showed the streptococcus pyogenes to be the organism present. The author believes that the labyrinth operation combined with lumbar or ventricular puncture might have saved the case.

CASE II.—Child of 9 months, died of meningitis: *no discharge from ears*: post-mortem cerebro-spinal fluid turbid, tympanic cavities contained mucopus: no perforation of membrane: effusion in first half turn of left cochlea.

Case III.—Boy, 3 years old, had acute otitis media (left) following streptococcal sore throat: radical mastoid operation: inner ear not opened. The left labyrinth showed diffuse purulent infiltration which had spread through the membrane of the round window.

Case IV.—Child of 7½ months; no otorrhœa; signs of general cerebro-spinal meningitis; cerebro-spinal fluid purulent with Gram negative diplococci. At the post-mortem the tympanic cavities contained pus, but the ossicles were intact and the *membrane was not perforated.* No labyrinth fistula was discovered. The left cochlea and vestibule contained inflammatory cells.

Mr Scott has already examined two hundred temporal bones and found evidence of recent infection of the labyrinth in a surprising number: he recommends that in cases of meningitis, after removal of the calvarium the brain should be cut across horizontally at the level of the sawcut, and that thereafter further slices should be removed in the same plane so that the contents of the posterior fossa may be observed *in situ*: he contends that many cases of post-basic meningitis arise from unsuspected infection of the labyrinth, and he maintains that he has not overlooked the possibility of the spread having been in an opposite direction, *i.e.* from the meninges to the labyrinth. It only remains to state that Mr Scott's paraffin sections and photo-micrographs are very beautiful and, in many ways (though not in all), superior to those obtained by the celloidin method.

J. S. Fraser.

CONTRIBUTION TO THE PATHOLOGY OF THE SO-CALLED (304) CIRCUMSCRIBED OTITIC MENINGITIS. (Beitrag zur Pathologie der sog. zirkumskripten otogenen Meningitis.) Engelhardt, *Deutsche Med. Wochenschr.*, Feb. 1909, p. 339.

Körner has of late doubted the alleged frequency of circumscribed purulent meningitis which, according to Gradenigo, presents the following triad of symptoms:—acute middle-ear inflammation, pain in the temporal and occipital regions, and paralysis of one or both abducens nerves (without, as a rule, participation of other cranial nerves). Of late, however, Gradenigo has put forward the view that the paralysis of the sixth nerve may be due to pachymeningitis at the tip of the petrous pyramid due to disease of the air-cells near the Eustachian tubes. In the present paper Engelhardt records a case of right abducens paralysis due to otitis media, in which, at the radical mastoid operation, a large cholesteatoma was found along with destruction of part of the labyrinth: the dura of the middle and posterior fossæ was not exposed. On the following day the patient was found to be stuporose; stiffness of neck and retraction of abdomen present: severe headache, contracted pupils, tense irregular pulse: right abducens paralysis, diplopia: Kernig's sign absent. Next day the right pupil was dilated, slight optic neuritis was present, there was double abducens paresis along with weakness of the right internal rectus: no rise of temperature. The patient rapidly improved, but the right abducens paresis was still present three months later. Uchermann has also recorded a case of "meningitis serosa" with irregularity of the pulse. Manasse recommends that when meningitic symptoms are present the dura should be exposed in addition to the mastoid operation, but Grossmann has recorded a case of meningitis in which there was vomiting, rigidity of the neck and facial paralysis with cloudy cerebro-spinal fluid (bacteria present), and yet a cure resulted from the radical mastoid operation without exposure of the sinus or dura. Engelhardt next discusses the question of lumbar puncture, and comes to the conclusion that there is much to be said for the old view of Stadelmann, that lumbar puncture may cause a meningitis to become generalised. Voss, on the other hand, recommends lumbar puncture as a therapeutic as well as a diagnostic measure in diffuse purulent meningitis: if the fluid contain streptococci, Engelhardt states that it is *no* error *not* to operate. The purulent collection in meningitis is in the subarachnoid space, which is extremely complicated, so that drainage and lavage are rendered difficult or impossible. Finally, the author suggests that, although the experimental production of meningitis is difficult, there is useful work to be done in this direction.

J. S. FRASER.

MULBERRY CELLS IN PARALYTIC ENCEPHALITIS. (Les (305) cellules mûriformes dans l'encéphalite paralytique.) LHERMITTE, *L'Encéphale*, Jan. 10, 1909, p. 32.

IN a case of juvenile general paralysis Lhermitte found "mulberry cells"—highly refractile, hyaline or colloid spherical bodies, in clusters—in abundance. They were particularly numerous in the œdematous cortex of the left hemisphere, and in the meninges, in the neighbourhood of distended vessel sheaths; in the white matter they were exceedingly rare. A nucleus and protoplasm could be demonstrated with suitable stains. Their chemical nature is obscure; they are neither fatty nor amyloid. Lhermitte believes they are the outcome of a peculiar form of degeneration of the mesodermic elements which infiltrate the brain of the general paralytic.

S. A. K. WILSON.

A STUDY OF THE AXIS-CYLINDERS IN FIVE CASES OF (306) GLIOMA CEREBRI. BYRNES, *Journ. of Nerv. and Ment. Dis.*, March 1909, p. 129.

IN this important contribution Byrnes has apparently elucidated the well-known clinical fact of the marked tendency to latency that gliomatous masses possess. By the Bielchowsky method he found in all cases a large number of intact nerve fibres. In two of the cases none could be seen with the Weigert staining, and erroneous conclusions as to the displacement of them might have been reached.

ERNEST JONES.

ON THE INFLAMMATORY NATURE OF CERTAIN FORMS OF (307) DISSEMINATED SCLEROSIS. (De la nature inflammatoire de certaines scléroses en plaques.) LEJONNE and LHERMITTE, *L'Encéphale*, March 10, 1909, p. 220.

A YOUNG woman, 20 years of age, with the characteristic symptoms of disseminated sclerosis of five years' duration died in hospital from typhoid fever. Plaques of sclerosis in every stage of development were found, from small inflammatory foci to old areas of neuroglial sclerosis.

In the cord the sclerotic patches were quite typical of the disease; in some the vessels were apparently normal, in others they were surrounded by a proliferation of embryonic cells invading the lymphatic sheath and even the vessel wall itself. In the brain, however, the pathological picture was very variable. Whether they were foci of organised sclerosis or degenerated myelin sheaths in patches, the affected spots were all rounded, and in their centre was a blood vessel. Where the sclerotic patches were old, embryonic cells were found invading the vessel walls, which sometimes showed hyaline degeneration. More recent foci, coloured by Marchi's method, were filled with granular bodies. The vessel walls were infiltrated by round cells. In the sclerosed areas, old or new, there was proliferation of the neuroglia, with conservation of the axis cylinders in all; no secondary degeneration was found anywhere.

The inflammatory areas round the vessels seemed far enough removed in appearance from the older sclerotic patches, but between the two every intermediate stage was found. The authors exclude the question of a terminal infection, pointing out that the characteristic pathological features of the latter are not found in their case. Apart from the sclerosed plaques no vascular degeneration could be discovered: the more recent the plaque, the more obvious the vascular alteration in its centre. They believe there is no essential and fundamental difference between disseminated sclerosis and disseminated myelitis, so called; it is a difference in degree rather than in kind.

S. A. K. WILSON.

ON THE FINE ALTERATIONS IN THE PERIPHERAL NERVES (308) IN MEDITERRANEAN FEVER. (Sulle fine alterazioni dei nervi periferici nella febbre mediterranea.)

VALENTINO COLOMBO, *Riv. di Pat. nerv. e ment.*, Vol. xiv., F. 4.

THE author comes to the following conclusions :—

Both the B. mellitensis and its endotoxins injected into the circulation provoke a parenchymatous neuritis, and this explains the paralysis and impairment of gait found in experimental animals after such injections.

The lesions of the nerve fibre are exclusively those of the axis cylinders which are the first to degenerate.

If by traumatism or squeezing the nerve trunk is injured and a virulent culture injected into the circulation, the seat of the traumatism will be the place of election for the toxin, and in addition to the traumatic degeneration evidence may be found of an interstitial neuritis.

The results of these experiments point to the conclusion that the painful symptoms of neuralgic nature so frequently found in the course and after the cessation of Mediterranean fever are largely due to gross toxic lesions of the peripheral nerve trunks.

F. GOLLA.

A DERMOID IN THE VERTEBRAL CANAL, ALONG WITH (309) DOUBLING OF THE SPINAL CORD. (Über Dermoide im Wirbelkanal neben Verdoppelung des Rückenmarks.)

HARRIEHAUSEN, *D. Ztschrft. f. Nervenheilk.*, Bd. 36, Hft. 3 and 4, S. 268.

A YOUNG man of 17, who fell from a cart on his back, began a few weeks afterwards to suffer from slight pains in his left leg ; a year later the leg was paretic both as regards motility and sensibility, with loss of all the reflexes, and pain was produced by pressure over the lumbar vertebræ. There then followed a period of gradual improvement, lasting three and a half years, succeeded by a return to the old condition, with also weakness of the right leg. A hyperalgesic zone being present at the level of the seventh and eighth dorsal vertebræ, the canal was opened at this level, but nothing abnormal found. Signs of a transverse myelitis followed and death shortly afterwards.

At the sectio the spinal cord was found to be normal throughout. At the level of the first and second lumbar vertebræ there was, inside the dura, but unconnected with it, a cylindrical dermoid cyst 5 cm. × 2½ cm., with a capsule ½ mm. thick, containing hair. There was no hæmorrhage in it. This tumour lay in a bifurcation of the cord commencing 11½ cm. above its lower end, the right half being stouter than the left. Both halves lay within a common pial sheath, but were separated opposite the tumour to an extent of 4 mm. Serial sections through the cord showed, above the bifurcation of the cord, a division of the central canal into two; then the cord widened transversely, the posterior horns became separated by the development of a wedge of glial tissue into which a little lower grew a septum of pia separating the cord into two halves. Each half then rotated round its central canal through 90°, so that the two anterior horns faced each other. In each half a new anterior and posterior horn then grew, lying dorsally to the originals. Although not so well formed as the ventrical pair, they contained nerve cells, and were connected with both anterior and posterior nerve roots.

The accident is supposed to have been the cause of the dermoid starting to grow; but why did it recede and again start? No explanation was found of the hyperalgesic zone in the dorsal region.

The review of the literature on doubling of the cord is by no means complete. J. H. HARVEY PIRIE.

INTERNAL SECRETORY GLANDS AND EPILEPSY. (Les glandes (310) à sécrétion interne chez les épileptiques.) CLAUDE and SCHMIERGELD, *L'Encéphale*, Jan. 10, 1909, p. 1.

THE authors have found that those glands which have an internal secretion are always the seat of some pathological change in epilepsy.

Thyroid.—The thyroid is usually small, sclerosed, sometimes fatty; the acini are diminished in size, their epithelium proliferated; the colloid substance is sometimes almost absent, sometimes it is collected in cysts. The vessel walls are often thickened.

Parathyroids.—The authors admit the difficulty of interpreting the changes in these glands, since so little relatively is known of them. They have found them either atrophied or hypertrophied.

Pituitary.—In fifteen cases this gland was twice hypertrophied, and in seven atrophied. In the other six it appeared normal.

Suprarenals.—In seven cases the appearances were those of a diminution of functional activity; in three the glands were normal; in five others marked differences were found between the two glands.

Ovaries.—In practically all the cases examined these glands were atrophic and sclerosed.

Pancreas, liver and kidneys.—The pancreas was rarely the seat of any change; the others frequently showed the signs of more or less common changes, nephritis and hepatitis.

S. A. K. WILSON.

THE PATHOLOGICAL ANATOMY OF DEMENTIA PRÆCOX.

(311) Klippel and Lhermitte, *Soc. de Psychiat. Paris*, Nov. 19, 1908.

First case, dementia præcox of the hebephrenic type. Death from chronic pulmonary tuberculosis at the age of twenty-two. Post-mortem no vascular or meningeal changes; in the cortex, cellular alterations practically in all regions, more particularly involving the two deepest layers of the cortex, the layer of pyramidal cells (μ 15-25), and the fusiform cells of Hammarberg; neuroglial proliferation more particularly in the deepest layers of the cortex; considerable atrophic diminution of the cerebellum.

In two other cases similar findings. S. A. K. Wilson.

ATROPHY OF THE CEREBELLUM IN DEMENTIA PRÆCOX.

(312) Klippel and Lhermitte, *Soc. de Psychiat. de Paris*, Jan. 21, 1900.

In two cases the authors found a cerebellar hemiatrophy, involving all the tissues of the hemisphere; the folia were all proportionately reduced in size. The Purkinje cells and those of the granular layer were diminished in number, though their size was normal.

In another case there was a global atrophy of the cerebellar hemispheres; the folia were atrophic while the central nuclei were unaffected. The Purkinje cells were markedly reduced in number, and to a less noticeable extent in volume. The cells of the granular layer were also much reduced in number, though not in volume. There was no sign of inflammatory reaction anywhere, nor any neuroglial change. S. A. K. Wilson.

AN ANATOMICAL STUDY ON MONGOLISM. (Anatomische Studien über den Mongolismus.)

(313) Paul Hellmann, *Arch. f. Kinderheilk.*, Bd. 49, H. 5-6, 1909, S. 329.

The first part of this paper is devoted to a description of the general appearance and anatomical peculiarities of Mongolian idiots. The author describes the well-known characteristic physiognomy, the general external anatomical appearances, the affections of internal organs, and the mental condition.

In contrasting it with cretinism he considers that thyroid treatment which is so beneficial in the latter disease is of benefit in the former to the constipation which is frequently present, to the umbilical hernia and to the general nutrition.

He has examined the brains of seven cases of Mongolism and compared them with corresponding parts of the normal brains from the adult, fœtus, newly-born child, children at different periods of life, and also with the brains from other forms of idiocy.

As regards the meninges and cerebral vessels of Mongolian idiots, he found no inflammatory processes and no proliferation of the connective tissue.

The cortex was not altered in thickness. There was no alteration in the cells of the cortex except that some were rather poor in protoplasm, and Nissl's granules were fewer than normal. There was no inflammatory condition of the neuroglia.

The cerebellum and spinal cord showed nothing pathological in the nerve cells and fibres.

There was no specific pathological alteration whatever of the brain, but merely a condition of retarded development, as is found in the whole body of Mongolian idiots.

The small size of the brain he considers as constant and characteristic.

The retarded development of the brain and other organs he regards as due to an obscure cause unknown to us. Probably it may be the result of the defect of some internal secretion which is normally active in the later months of fœtal life.

R. J. Mackessack.

CLINICAL NEUROLOGY.

CASE OF MYASTHENIA GRAVIS. W. B. Warrington, *Med.* (314) *Press and Circ.*, April 7, 1909.

The author records a typical examination of myasthenia in a woman æt. 31. The duration of the disease was about one year, and began with fatigue in walking; difficulty in swallowing and regurgitation of fluid through the nose with occasional double vision were soon noticed.

A few special points were—slight wasting of the tongue, small degree of ptosis, profound weakness of the neck muscles and masseters, of the deltoid and triceps. Many muscles showed the myasthenic reaction. A considerable excess of lymphocytes was present, without absolute leucocytosis. Any exertion rapidly caused great exhaustion and rapidity of breathing, chiefly diaphragmatic, the intercostals and extrinsic muscles of respiration making painful but futile efforts to expand and raise the thorax. The patient improved a good deal after complete rest for several weeks.

Quite recently the author has seen another case in a woman æt. 50, chiefly remarkable on account of the apparent rapid onset of symptoms and early fatal termination. The patient, a school inspector, had been able to go about her work until a month before the fatal end, though an increase of fatigue in walking had been noticed. When first seen she was quite prostrated, and any excitement or physical exertion brought on attacks of dyspnœa and distressing swallowing movements. Here also ptosis was not an obvious sign, though it was elicited in the usual manner, and also paresis of the upward movement of the left eye was noticed. The lateral excursions of the globes were also deficient. The masseters, neck muscles, deltoid and triceps were very feeble, and the contraction evoked by faradism soon disappeared with a continuation of the stimulus. This patient died suddenly with an attack of bulbar symptoms about a week after I had first seen her, and not more than one month after obvious fatigue had developed.

The weakness was dated by the patient and her friends as following a series of " colds," but a toxic peripheral neuritis seemed excluded. AUTHOR'S ABSTRACT.

AMYOTONIA CONGENITA: THE RECORD OF A CASE WITH (315) THE ACCOMPANYING CLINICAL FINDINGS.

ORBISON, *Journ. of Nerv. and Ment. Dis.*, April 1909, p. 204.

AFTER giving a general review of the subject Orbison narrates a typical case. The patient was a female child, 4 years old, of Mexican birth. No new point is elucidated. This is the second case recorded in America, Spiller's being the first.

ERNEST JONES.

ADIPOSIS DOLOROSA.

PRICE, BERGERON and DERCUM, *Philadelphia Neur. Soc.*, Oct. 23, 1908.
(316)

IN three separate papers these authors reported several cases of this nature. In Bergeron's case the large nerve trunks were involved; in Dercum's there was present spasticity and contracture of the extremities. ERNEST JONES.

TABES WITH ATROPHY OF THE MUSCLES SUPPLIED BY (317) THE MOTOR FIFTH, ETC. (Tabes avec atrophie des muscles innervés par la branche motrice du trigumeau, etc.)

SOUQUES and CHÉNÉ, *Rev. Neurol.*, March 15, 1909, p. 249.

IN a typical case of tabes there was bilateral atrophy more marked on the left side of all the muscles supplied by the motor fifth, the vagus, the spinal accessory, and the inferior branches of the brachial plexus. S. A. K. WILSON.

SACRAL TABES: A CASE WITH NECROPSY. LEOPOLD, *Journ.*
(318) *of Nerv. and Ment. Dis.*, April 1909, p. 193.

THE patient, a man of 54, had for eighteen months before admission suffered from ataxia and urinary incontinence. Hypotonicity, ataxia and sluggishness of the pupil were present. The Achilles jerks were absent, but the knee jerks were normal. Postmortem the usual tabetic changes were found, and are described and depicted. They, however, were mainly confined to the sacral region, the lumbar sequents being only slightly implicated. Such cases are rare at autopsy. ERNEST JONES.

ACUTE POLIOMYELITIS IN A CHILD — CLINICALLY AN
(319) **ASCENDING LANDRY'S PARALYSIS. (Zur Kenntniss der pathologischen Anatomie und der Pathogenese eines unter dem Bilde der aufsteigenden Landry'schen Paralyse verlaufenden Falles von Poliomyelitis acuta beim Kinde.)** THERESE SAVINI-CASTANO and EMIL SAVINI, *Arch. f. Psych. u. Nervenkrankh.*, Bd. 45, Hft. 2, S. 642.

THIS case was a child of 1 year old, who six weeks before the onset of the disease had had measles, and two and a half weeks before fell out of bed on its head. The illness lasted four weeks, death ensuing from respiratory paralysis. The clinical picture was that of an ascending Landry's paralysis commencing in the lower limbs, and ending with a paralysis of practically the whole body, including the abdominal and intercostal muscles. There was, in addition, some sensory paresis, corresponding with degeneration found in the posterior horns and sensory tracts of the cord post-mortem. The cells of the grey matter of the cord showed degenerative changes of varying degree throughout the whole cord, most marked in the lumbar region, but little less so in the dorsal and cervical. The anterior horn cells were most involved, but those of Clarke's column had also suffered severely. In the medulla the hypoglossal nucleus was only slightly involved, the vagus and glossopharyngeal much more so. No neuronophagy of the affected cells was observed.

The interstitial changes were most evident in the area of the anterior spinal vessels, but not limited to it. The vessels were congested, their lymph sheaths widened and containing amorphous matter (which may have been due to the formaline and Müller's fluid fixation), but scarcely any round cells. Marchi staining revealed a marked degeneration of the anterior roots and some of the white columns, but no fat granules in the nerve cells or in the vessel walls.

It would appear to be a case where the direct effects of the unknown toxin have fallen almost entirely on the nerve cells. No organisms were found either in the cerebro-spinal fluid or in the cord.
J. H. HARVEY PIRIE.

A CASE OF A FAMILIAL DISEASE INTERMEDIATE BETWEEN SPASTIC PARAPLEGIA AND HEREDITARY CEREBELLAR ATAXIA. (Un cas de maladie familiale intermédiaire à la paraplégie spasmodique et l'hérédo-ataxie cérébelleuse.)

(320) RAYMOND and ROSE, *L'Encéphale*, March 10, 1909, p. 209.

THE patient is a young man of 25. His gait is extremely spastic and extremely ataxic; his feet are in the position of slight equinovarus, with double pes cavus; on volitional movement of the legs a rhythmical tremor is seen. In the arms, typical cerebellar inco-ordination, with impairment of diadochokinesis; monotonous and dysarthric utterance; normal pupils and optic discs. Paralysis of the left external rectus, and defective upward movement of the eyes. There is no note as to nystagmus. The deep reflexes are brisk; the abdominals are present; the great toes are in permanent hyperextension. His symptoms began at about the age of fifteen.

His paternal great-grandmother, his grandfather, father, father's brother and father's sister were all affected. The last of these has been seen by the authors. She has nystagmus in addition to symptoms like those of her nephew. The spasticity of the lower extremities and the exaggeration of the reflexes are not characteristic of Friedreich's disease; the club feet and cerebellar symptoms are not found in family spastic paraplegia; the spastic limbs and the club feet are not met with in "hereditary cerebellar ataxia."
S. A. K. WILSON.

A FATAL CASE OF LATE DIPHTHERITIC PARALYSIS. (Un caso letale di paralisi postdipterica tardiva.)

(321) C. ACHILLE, *Gazz. degli Osp.*, 1909, p. 433.

A BOY, aged 6 years, had a severe attack of diphtheria which was treated with antitoxin. Palatal palsy occurred on the eleventh day. All went well for another twelve days, when complete left hemiplegia and aphasia suddenly developed. Death took place three days later from respiratory and cardiac paralysis. No autopsy was held. Achille attributes the hemiplegia to thrombosis.
J. D. ROLLESTON.

THE CEREBRO-SPINAL FLUID IN DIPHTHERITIC PARALYSIS. (Zur Klinik postdiphtherischer Pseudotabes. Liquorbefunde bei postdiphtherischer Lähmung.)

(322) L. Römheld, *D. med. Woch.*, 1909, No. 15, p. 669.

In addition to one already published (v. this *Review*, 1908, p. 712), Römheld records the following case communicated to him by Professor Nissl. A boy, aged 4 years, had a severe attack of diphtheria followed by paralysis of the lower limbs lasting for several months, and progressive imbecility. He had hitherto been quite healthy, and had suffered from no disease which could have produced this condition, *e.g.* syphilis, meningitis, or encephalitis. Two lumbar punctures performed when he was eighteen years old showed considerable lymphocytosis and a large quantity of albumin. In the absence of anatomical proof the exact nature of the lesion was impossible to determine, but Römheld was inclined to regard it as a diffuse organic change in the cerebral cortex associated with chronic meningitis resembling that met with in certain metasyphilitic processes. J. D. Rolleston.

THE FREQUENCY OF MENINGITIS IN PNEUMONIA. (Die Häufigkeit der Meningitis bei Pneumonie.)

(323) G. Liebermeister, *Muenchener Medizinische Wochenschrift*, April 13, 1909, p. 750.

Meningitis is recognised as a complication of pneumonia, but the frequency of its occurrence in this connection has been very variously stated. The reason for this is not far to seek, as often the spinal cord has only been examined in fatal cases of pneumonia, if symptoms of meningitis have been noted clinically. In addition, macroscopic examination in many cases has been thought sufficient. The author quotes various statistics on the subject, and gives a series of eleven cases of fatal pneumonia of which he has examined the spinal cord microscopically. In no case was there clinically any evidence of meningitis, and macroscopically no change was visible in the spinal meninges. However, he found that three of these cases gave definite microscopical evidence of meningitis. The only figures which approach this percentage (30 per cent.) are those of Immermann and Heller, who thought that an accompanying epidemic of cerebro-spinal meningitis accounted for their results. The author concludes that either meningitis is a much more common complication of pneumonia than is usually supposed, or that there is a connection between the meningitis which accompanies pneumonia and cerebro-spinal meningitis.

Further observations are desirable on this point, and also on the cerebral symptoms which often accompany such infections as influenza, the acute exanthemata, tuberculosis, etc.

C. M. Hinds Howell.

MENINGOCOCCUS SEPTICÆMIA WITH STERILE CEREBRO-SPINAL FLUID; IRIDO-CYCLITIS; FLEXNER'S SERUM; RECOVERY. D. Bovaird, *Arch. of Int. Med.*, 1909, p. 267.

(324)

A girl, aged 15, was admitted to hospital on the second day of disease with a profuse purpuric eruption. She was unconscious, but did not present any stiffness of the neck or extremities nor other definite evidence of invasion of the cord or brain. Subsequently a fretful and irritable mental condition supervened, with definite rigidity and Kernig's sign and general hyperæsthesia. Five lumbar punctures proved sterile. Meningococci were found in a blood culture taken on the sixth day of disease. 20 c.c. of Flexner's serum were injected intraspinally and 25 c.c. intravenously on the eleventh day. Three days later 30 c.c. were given subcutaneously. At the end of a month the patient had recovered, though vision was lost in the right eye. Similar cases of meningococcus septicæmia without meningitis have been reported by Andrews (*Lancet*, i., 1906, p. 1172), and Liebermeister (*Münch. Med. Woch.*, 1908, p. 1978).

J. D. Rolleston.

ON THREE CASES OF CEREBRO-SPINAL MENINGITIS ASSOCIATED RESPECTIVELY WITH BACILLUS ANTHRACIS, BACILLUS TYPHOSUS, AND BACILLUS ENTERITIDIS (GAERTNER). W. St Clair Symmers and W. James Wilson, *Journ. Pathol. and Bacteriol.*, Vol. xiii., 1909, p. 251.

(325)

The changes in the nervous system in the case of anthrax infection consisted of a hæmorrhagic leptomeningitis. The hæmorrhagic covering was most marked about the Sylvian fissures and sides of the organ, so much so that the underlying surface of the cerebrum was completely obscured by the paint-like reddening of the pia arachnoid.

The presence of fibrin and infiltration with leucocytes showed that the lesions were inflammatory and not merely extravasations of blood.

From the second case a bacillus corresponding in cultural, fermentative and agglutinative characters with the bacillus typhosus was isolated. A turbid fibrino-purulent fluid was obtained by lumbar puncture. A differential count of the cells in this exudate gave polymorphonuclear leucocytes 40 per cent., large lymphocytes 32 per cent., small lymphocytes 22 per cent., large mononuclear cells 6 per cent.

From the cerebro-spinal fluid of the third case (a child aged 4 months) a bacillus corresponding in every particular with the bacillus enteritidis (Gaertner) was cultivated during life and afterwards isolated from the meninges, spleen, mesenteric glands and bile at the autopsy. In this case there was a fibrinous exudate covering the interpeduncular space. The intestines showed no inflammatory changes, no enlargement of Peyer's patches and solitary follicles, no ulceration. AUTHOR'S ABSTRACT.

EPIDEMIC OF CEREBRO-SPINAL MENINGITIS IN PARIS AND THE SUBURBS. SUCCESS OF ANTI-MENINGOCOCCIC SERUM.

(326) **(Existence d'une epidémie de méningite cérébro-spinale à Paris et dans la banlieue. Efficacité du sérum anti-méningococcique.)** A. NETTER, *Bull. de l'Acad. de Méd.*, March 9, 1909, p. 300.

FROM 1848 to 1898 epidemic cerebro-spinal meningitis was practically unknown in France. From 1899 to 1907 Netter had seen from one to six cases yearly. During 1908, he had had eight cases, and from December 1908 to March 1909 seventeen. To prevent the spread of the threatening epidemic he recommends the examination of the nasal mucus of school children and the isolation of " carrier " cases.

He had treated fifteen cases by anti-meningococcic serum. The serums employed were those of Dopter, Wassermann, and Flexner. Four cases were still under treatment. Of the eleven others, three had died, one of whom was moribund on admission to hospital. A mild arthritis occurred in two cases, and jaundice in one. There were no sequelæ. Intraspinal injections were given in large doses —20 to 30 c.c. for children, and 30 to 45 c.c. for adults, and repeated for three or four consecutive days. Early injection is important, but even late cases benefit by the treatment, since four cases made a speedy recovery which had first been injected on the sixteenth, twenty-fourth, twenty-fifth, and twenty-eighth days respectively.

In two or three days after the commencement of treatment marked rigidity disappears, Kernig's sign becomes less marked, the temperature falls, and the mental condition improves. The cerebro-spinal fluid simultaneously becomes clearer, the meningococci diminish in number and size, and lose their staining capacity and viability in cultures, while the leucocytes show less morbid change and tend to disappear. J. D. ROLLESTON.

THE TREATMENT OF EPIDEMIC CEREBRO-SPINAL MENINGITIS.

(327) **(Le traitement des méningites cérébro-spinales épidémiques.)** CHAMBELLAND, *Presse Méd.*, 1909, p. 250.

CHAMBELLAND records three cases which recovered without sequelæ. Two were soldiers, and one a boy aged 7 years. The treatment consisted in lumbar puncture repeated every two or three days, and hot baths for twenty-five minutes every four hours. Each lumbar puncture was followed by an intra-spinal injection of from 5-10 c.c. of electrargol. Serotherapy was not employed.

J. D. ROLLESTON.

TECHNIQUE OF ANTI-MENINGOCOCCAL SERUM INJECTION (328) IN THE TREATMENT OF EPIDEMIC CEREBRO-SPINAL MENINGITIS. (Technique des injections de sérum anti-méningococcique dans le traitement de la méningite cérébro-spinale epidémique.)

C. DOPTER, *Progrès méd.*, 1909, p. 213.

LUMBAR puncture should first be made in the lateral decubitus with the thighs flexed on the trunk, the back arched, and the head slightly raised on a bolster. The needle should be driven into the fourth lumbar interspace. The amount of cerebro-spinal fluid removed should equal or preferably exceed the amount of serum injected, otherwise compression phenomena result as manifested by increase of headache, convulsions and syncopal attacks. The serum, which has previously been heated to 100·4°, should be injected slowly and without a jerk. After injection the patient should be placed in a position most suitable for the diffusion of the serum to the higher nerve centres. This is realised by placing one or more pillows under the pelvis, and, if necessary, by raising the foot of the bed. The patient should be left in this position for five or six hours. If there is restlessness or delirium, morphia should be injected at once. The following doses of serum are recommended:—For children less than two years, 10-15 c.c.; for older children, 15-20 c.c.; for adults, 20-40 c.c. The injections should be repeated for three or four consecutive days. Since early injection is important, serum should be given in every case of suspected cerebro-spinal meningitis in which the fluid is turbid or opalescent without waiting for the bacteriological report.

J. D. ROLLESTON.

TREATMENT OF SUPPURATIVE CEREBRO-SPINAL MENINGITIS. (329) PROLONGED HOT BATHS. REPEATED LUMBAR PUNCTURE. COLLARGOL. SUCCESS OF ANTI-MENINGOCOCCIC SERUM. (Traitement de la méningite cérébro-spinale suppurée. Bains chauds prolongés. Ponctions lombaires répétées. Collargol. Efficacité du sérum antiméningococcique.)

A. NETTER, *Bull. et mém. de la soc. méd. des Hôp. de Paris,* 1908, p. 762.

A RECORD of thirty-six cases in which one or more of the above methods of treatment were adopted. Netter insists on the importance of intraspinal injection of the serum and of its early administration. Subcutaneous injections he regards as useless.

J. D. ROLLESTON.

THE THALAMIC SYNDROME. (Le syndrome thalamique.) HARTENBERG, *Presse méd.*, jan. 15, 1908.
(330)

THIS is a critical review of the position taken by Déjerine and Roussy with regard to this question (see page 67 of this *Review*). The author points out with justice that the term of thalamic syndrome which they adopt is too comprehensive, as they do not claim that it is related to more than one part of this ganglion, viz., its postero-external nucleus, and express no opinion as to any other portion of the nucleus, except the pulvinar, the relationship of lesions of which to hemianopsia is well known and generally admitted. Hartenberg points out that Bechterew and Mislawski maintain that the thalamus contains reflex centres for respiration, movements of heart, of stomach, intestine, rectum, bladder, vagina, for the secretion of tears and for vaso-motor action; that Bechterew and Nothnagel regard it as a co-ordinating centre of pyscho-reflex movements of mimicry, and that Brissaud, Mingazzini and von Monokow regard it as a vaso-motor and trophic centre.

It is evident that much careful clinical and experimental work still requires to be done before the functions of this important ganglion are definitely established. ALEXANDER BRUCE.

TWO NEW CASES OF LESION OF THE OPTIC THALAMUS (WITH AUTOPSY). (Deux nouveaux cas de lésions de la couche optique suivis d'autopsie.) ROUSSY, *Rev. Neurol.*, March 30, 1909, p. 301.
(331)

THE first case is that of a man aged 69, who had a slight right motor hemiplegia, as the result of a stroke, without loss of speech. At the same time there were marked sensory changes on the affected side. The motor hemiplegia cleared up in about six weeks, but hemichorea and hemiataxia persisted on that side; in addition there was a persistent right hemianæsthesia and hemianalgesia, both cutaneous and deep sensibility was impaired, there was astereognosis and loss of the sense of position of the limbs. Finally there was intense, continual and intractable paroxysmal pain on the right side of the face. At the autopsy the posterior third of the external nucleus of the left optic thalamus was destroyed by softening, as was part of the internal nucleus and a small section of the posterior part of the internal capsule.

The second case is that of a man aged 63, who suffered from a series of attacks of right hemiplegia, spastic in type, with persisting right hemianæsthesia, the affection of deep sensibility being greater than that of cutaneous sensibility, with loss of the sense of position and with astereognosis, and finally with subjective pains on the right side of the body. At the autopsy a lesion was found in exactly the same situation as in the first case, but older, more irregular, and slightly more extensive (see p. 67 of this *Review*).

S. A. K. Wilson.

OTITIC BRAIN ABSCESS. Bacon, Whiting, Wiener, and Sachs (332) and Berg, *New York Neurol. Soc.*, Dec. 1, 1908; *Journ. of Nerv. and Ment. Dis.*, April 1909, p. 212.

Four papers were read by these authors, and a general discussion of the subject followed. Bacon described a successful case that had been operated on thirteen years before. Whiting gives several operative details, and attributes many of the disappointing results to lack of attention to the post-operative treatment. In one of Sachs' cases a subcortical abscess was correctly localised. Dench referred to eighteen cases he had operated on, of which six had recovered.

Ernest Jones.

A CASE OF THROMBOSIS OF THE LEFT POSTERIOR INFERIOR (333) CEREBELLAR ARTERY. S. A. K. Wilson, *Proc. Roy. Soc. of Med. Lond.* Feb. 1909.

Of various medullary syndromes that are found to present a more or less constant clinical picture, that occasioned by a lesion of the posterior inferior cerebellar artery is certainly one of the most striking. As the vessel winds round the side of the medulla it gives off small branches to that structure which are end arteries, whereas the terminal branches anastomose freely on the cerebellum with the similar vessel of the opposite side. Thus there is a remarkable constancy in the way in which the residual softening from thrombosis of the main vessel is confined to a limited area in the lateral part of the medulla. It commonly involves the formatio reticularis and its nuclei, the descending root of the fifth and the cells in association, the nucleus ambiguus and vago-glossopharyngeal nucleus, the glossopharyngeal and vagus nerves, the ventral spino-cerebellar tract, and the dorsal spino-cerebellar tract and other fibres passing into the inferior cerebellar peduncle. The corresponding clinical symptom-complex is one of unilateral disturbance in the distribution of the eighth, ninth and tenth cranial nerves, hemiataxia on the same side as the lesion, disturbance of the cervical sympathetic on the same side, and a crossed dissociated anæsthesia, the face on the same side as the lesion and the body on the other.

The patient in the case recorded presented in a highly characteristic fashion the symptoms above enumerated. The onset was sudden without loss of consciousness; acute ataxia of the left limbs; forced movements to the left; tinnitus in the left ear; difficulty in swallowing; difficulty in producing any voice for speaking; nystagmus to the left, diplopia on looking to the left; typical symptoms of left cervical sympathetic palsy, the right side of the face being bathed in perspiration, the left perfectly dry; periodic attacks of violent vomiting; paralysis of the palate on the left side, and of the left vocal cord; no affection whatever of the motor fifth or of the facial muscles; no weakness of the limbs. There was no change in the cutaneous or deep reflexes. A well-marked crossed and dissociated anæsthesia was found, the left half of the face and the right limbs and right half of the body being affected. There was also tachycardia and irregularity of respiratory rhythm. After the more acute symptoms subsided many examinations of the state of sensibility were made.

1. Over the left side of the face, closely but not entirely corresponding to the distribution of the trigeminal nerve, there was—
   - (*a*) Complete loss to painful stimuli of cutaneous origin.
   - (*b*) Complete loss to all degrees of heat and cold.
   - (*c*) Conservation of touch, tactile discrimination, localisation, light and deep pressure, and pressure pain.
2. On the right half of the body—
   - (*a*) Complete loss to pain of cutaneous origin over the right trunk and limbs, but not on the face.
   - (*b*) Complete loss to all degrees of cold on that side, including the face. With this, loss to stimuli of varying degrees of heat, all of which were felt as tepid. This loss similarly included the right face.
   - (*c*) Touch, light and deep pressure, pressure pain, localisation, tactile discrimination, muscular sensibility, and sense of shape and size were intact.

Where the patient had lost sensibility to cold stimuli, there he felt a constant "subjective" sensation of tingling and warmth. He himself discovered the remarkable fact that pricking the left side of the face or right half of the body never resulted in any bleeding, although it did so elsewhere.

A discussion of the many points of interest suggested by the case is given in the paper. AUTHOR'S ABSTRACT.

A FAMILY DISEASE OF THE CEREBELLAR MECHANISM.

(334) (Sur un cas de maladie familiale de l'appareil cérébelleux.)

RAYMOND and LHERMITTE, *Rev. Neurol.*, Feb. 28, 1909, p. 235.

EIGHT members in three generations of one family were afflicted with the same disease, which consisted in a typical cerebellar gait, slight tremor of the arms and legs, slight inco-ordination of the arms, slow, slurring articulation, diminution of the deep reflexes; there was no trouble of sensibility and no nystagmus. At the autopsy of the case reported the cerebellum was found to be somewhat diminished in size: the peduncles, pons, medulla and cord all appeared slender. The Purkinje cells of the cerebellum were found to be very much reduced in number, but the granular layer was practically normal; there was no neuroglial overgrowth, and neither vascular nor meningeal disease. The cerebellar nuclei were poor in cells, the fibres leaving the dentates sparse, the superior cerebellar peduncles slender, their fibres considerably diminished in number, the middle and inferior cerebellar peduncles pale by comparison with the well-stained descending root of the fifth. The bulbar olives showed great diminution in the number of their cells, and the olivo-cerebellar fibres were rarified. In the cord the spino-cerebellar tracts were almost completely degenerated, but not in a perfectly systematised way. The dorsal columns of the cord were partly degenerated. Further, many of the anterior horn cells of the cord had vanished. The authors suggest their case presents analogies to the cases of Thomas and Roux, Switalski and Rydel, cases diagnosed clinically as "hereditary cerebellar ataxia."

S. A. K. WILSON.

A CASE OF WORD DEAFNESS WITH INTELLECTUAL DEFECT. (335) E. W. TAYLOR, *Boston Soc. of Psychiat. and Neurol.*, Oct. 15, 1908.

THE patient, a minister 52 years old, had been affected with a gradually increasing difficulty in the use of language. To cover his inability to understand what was said to him he had formed the habit of volubly discussing irrelevant subjects. There was no paraphasia. Gross intellectual defect was present.

ERNEST JONES.

EXOPHTHALMIC GOITRE. CLARENCE A. M'WILLIAMS, *N.Y. Med. Journ.*, April 3, 1909. (336)

THE writer gives an account of the recent work done by Kocher and others on the subject. He discusses the medical and surgical modes of treatment, and reports a case in which surgical treatment effected a cure.

D. K. HENDERSON.

THE INFLUENCE OF EMOTIONAL STATES ON THE FUNCTIONS OF THE ALIMENTARY CANAL. (337) W. B. CANNON, *Amer. Journ. Med. Sc.*, April 1909.

IN this interesting paper the writer briefly describes experiments performed by himself and others on animals to show how emotional states affect the motility and secretory activity of the stomach and intestines. He shows that normal secretion is favoured by pleasurable sensations during mastication, and also that unpleasant feelings such as vexation, and some of the major emotions such as excitement, are accompanied by a failure of secretion and by a stoppage of the movements of the stomach and of almost the entire alimentary canal. It is pointed out that the importance of not permitting grief, anger and other violent emotions to prevail unduly is not commonly understood. The examination of the mental state of the patient is strongly urged before passing judgment on the nature of his digestive disease. D. K. HENDERSON.

A PECULIAR KIND OF PAINFUL SENSATION ASSOCIATED (338) WITH AN ENLARGED PROSTATE. (Ueber eine eigenthümliche schmerzhafte Mitempfindung bei einem Prostatiker.)

M. BERNHARDT, *Neurol. Centralbl.*, March 16, 1909, p. 297.

THE case is that of a man of 60 years, who, apart from an enlargement of the prostate, appears to have been in good health. During the act of micturition, after forcing for some time at the moment when the pressure in the bladder was relieved and the urine began to pass, the patient complained of a peculiar painful sensation in both hands, and in the lower third of both fore-arms on the radial aspect over a distribution corresponding to that supplied by the musculo, cutanous, radial, and median nerves. This painful feeling, which lasted for from five to ten minutes, involved also the dorsum of the thumb, the muscles of the ball of the thumb, and sometimes also the two or three first fingers of the hand. The phenomenon was not of daily occurrence, and no disturbance of movement or sensation was detected on objective examination.

The author is at a loss to explain this peculiar symptom, which he states has not been observed by colleagues of whom he has inquired who in their practices meet with hundreds of cases of enlarged prostate. EDWIN BRAMWELL.

PLURIGLANDULAR SYNDROMES OF INTERNAL SECRETION. (339) (Syndromos Pluriglandulares endocrinicos.)

A. AUSTREGESILO, *Communic. à Soc. de Psych. e Neurol. Rio de Janeiro*, 1909.

THIS pamphlet contains a description of and commentary upon two cases by Austregesilo, who six years previously had formulated a polyglandular hypothesis for diabetes mellitus, and three years later had suggested a similar origin for dementia præcox, imbecility, and mental disorders of senile involution.

His views will be found to coincide in the main with those of Rénon and Delille, and Claude and Gougerot (v. *Review*, 1908, p.669, and 1909, pp. 124, 285, 286), to whose work he repeatedly alludes.

In both his cases thyroid insufficiency was predominant, as was shown by the changes in the hair and skin, and the loss of sight and hearing, but affection of the suprarenals was indicated in one case by excessively high and in the other by very low blood pressure and pigmentation.

In both, testicular insufficiency was manifested by impotence and testicular atrophy.

Pituitary incompetence was revealed by emaciation and trophic changes.

Both showed psychical changes—delusions of persecution, mental confusion, and the dream delirium described by Regis—which cannot be attributed to the insufficiency of a single gland of internal secretion, but to the combined insufficiency of several (hypo-endocrinia). J. D. Rolleston.

THE TREPONEMA PALLIDUM IN THE CEREBRO-SPINAL (340) FLUID IN ACQUIRED SYPHILIS OF THE NERVOUS SYSTEM. (Constatation du Treponema pallidum au cours de la syphilis acquise des centres nerveux.) E. Gaucher and P. Merle, *C. R. hebd. des séances de l'Acad. de Sciences*, No. 13, 1909, p. 862.

A man who had acquired syphilis eight months previously succumbed to an ictus on the fourth day of an attack of right hemiplegia. At the necropsy the cerebral meninges were found to be congested and œdematous. A slightly turbid exudate was found beneath the dura. In this and in still greater numbers in the fluid obtained from the lateral ventricles spirilla resembling the treponema pallidum were found. A few previous cases have been recorded in which this micro-organism was found in the cerebro-spinal fluid (Ravaut and Ponselle, Neisser, Babes and Panea), but this is the first case in which it has been found in acquired syphilis of the nervous system. Its occurrence helps to elucidate the pathogeny of certain acute forms of cerebro-spinal syphilis arising at an early stage of the disease when the infection is still generalised.

J. D. Rolleston.

A MODIFICATION IN THE METHOD FOR THE DETECTION (341) OF CHOLINE AND NEW RESEARCHES ON THE PRESENCE OF CHOLINE AND LECITHIN IN THE CEREBRO-SPINAL FLUID. (Modificazione al metodo di ricerca della colina e nuove indagine sulla presenza di essa e di lecitina nel liquido cefalo-rachideo.) A. Zivèri, *Riv. di Pat. nerv. e ment.*, Vol. xiv., F. 3, p. 134.

The author introduces a slight modification of the method of Rosenheim for the detection of choline. The solution of choline is treated, after evaporation to dryness on a cover-glass, with a drop of the iodoiodate solution without employing platinum chloride, and at the same time with a drop of sulphuric acid. The formation of choline periodate crystals takes place immediately in solutions of a concentration of 1 in 500, and after about half to a quarter of an hour in less concentrated solutions. The reaction is so delicate that the formation of crystals could be verified in 50 cubic millimetres of a 1 in 100,000 solution. Sulphuric acid gives with the periodate solution brown crystals lozenge-shaped which are easily distinguishable from those of choline. A similar method was adopted for the detection of lecithin. It was found that by treating an emulsion of lecithin with sulphuric acid for some hours, then treating the residue after evaporation with the periodate solution, crystals of choline were obtained. An emulsion of lecithin containing one part per 100,000 gave definite crystals of the periodate of choline after treating with sulphuric acid for twelve hours.

The author was able to corroborate the results of Kajura, finding choline to be absent in the cerebro-spinal fluid of epileptics, and hence an additional proof of the inaccuracy of the results of Donath is furnished. He was able to find very small quantities of lecithin in the cerebro-spinal fluid of general paralytics. This is of interest in view of the increase of lecithin found by Peritz in the serum of tabetics.

F. Golla.

EXOPHTHALMOS ASSOCIATED WITH FACIAL PALSY. W. G.
(342) Spiller, *Philadelphia Neurol. Soc.*, Nov. 27, 1908.

This unique case occurred in a female child aged 3. The syndrome is still present eleven years later. A difference of three millimetres between the two eyes was found with Hertel's exophthalmometer. The lesion was probably a sinus thrombosis.

Ernest Jones.

THE IMPORTANCE OF VESTIBULAR NYSTAGMUS IN THE (343) DIAGNOSIS OF OTITIC AND INTRACRANIAL DISEASES.
(Die Bedeutung des vestibularen Nystagmus bei der Diagnose otitischer und intrakranieller Erkrankungen.) Wagener (Berlin), *Med. Klinik*, Nr. 11, 1909.

Attention is called to the fact that recent advances have tended to place our knowledge of the two divisions of the eighth nerve on somewhat the same footing as that obtained by the oculists in the case of the second nerve. The rest of the lecture consists of little more than an abstract of Bárány's well-known work which was reviewed in the April number of this Journal. Wagener looks on the vestibular apparatus as an organ for the regulation of balance: the semicircular canals enable us to recognise any increase in the rate of rotation, while the otolith apparatus in the sacculus and utriculus give us information concerning the position of the body and increase in the rate of movement in a straight line. Irritation of the labyrinth produces subjectively a feeling of giddiness and objectively disturbances of balancing and nystagmus. Wagener points out that, when both labyrinths are destroyed, nystagmus can be produced by the galvanic current although the rotation and caloric tests are negative: he holds that this fact goes to prove the theory that nystagmus is really due to the nuclei of the vestibular nerve and that the labyrinth only conveys the stimulus. The author records a case of abscess in the third temporal convolution: the labyrinth was healthy, and, as nystagmus was present to the diseased side, a diagnosis of cerebellar abscess was made. After the temporo-sphenoidal abscess had been opened the nystagmus diminished, only to recur when retention of pus took place; free drainage caused the nystagmus to disappear. Wagener considers that in this case the eye symptoms were due to pressure. In meningitic irritation of the cerebellum, just as in cerebellar abscess and tumour, nystagmus is usually towards the diseased side.

J. S. FRASER.

PSYCHIATRY.

A STUDY OF THE MENTAL MAKE-UP IN THE FUNCTIONAL (344) PSYCHOSES.

HOCH, *New York Psychiat. Soc.*, Nov. 4, 1908.

THE main object of this paper, which was followed by a lively discussion, was to point out the importance of the early personal history and the mental type in relation to the form of psychosis actually present. Hoch finds, for instance, that in most cases of dementia præcox there were peculiarities in the mental make-up of the patients for many years before the psychosis developed; what he terms the "shut-in" personality was especially frequent. His study shows how essential it is in judging of any given case to compare the mental state with that characteristic of the patient in earlier years, rather than with any abstract "normal" state.

ERNEST JONES.

AN UNUSUAL CASE OF MENTAL DEFECT OF TRAUMATIC (345) ORIGIN.

H. H. DRYSDALE, *Journ. Amer. Med. Assoc.*, Vol. lii., No. 14.

THE case of a boy, 7 years old, who when two and a half years old accidentally fell about six feet, receiving a wound over the right frontal area; the wound healed rapidly and without complications.

Previous to the accident the boy had been considered normal in every respect. Within a year following this he became dull, listless, and fearful; he was partially amnesic; he persisted in doing things in a reverse manner, *e.g.* lacing his shoes from the top down. When six years old he was sent to school, but his teachers noticed that he was deficient in attention, perceptive power, and faculty of learning, and so he was transferred to the department for defectives. When he was examined no physical abnormalities could be discovered; he looked dull, spoke only when questioned, and his interest was difficult to arouse. When requested to copy letters he inverted them, and, although aware of his mistakes, could not correct them.

An operation was performed, not with any idea of cure, but simply to relieve intracranial tension. When discharged from the hospital two weeks after the operation his condition was unchanged, but six weeks after his discharge it was learned that he was gradually improving. He is now fairly bright and keen, can reproduce figures and letters correctly; his memory and perceptive powers are good, and he is able and willing to learn. D. K. HENDERSON.

CLINICAL AND ANATOMICAL INVESTIGATION OF A TOXI-INFECTIVE PSYCHOSIS OF CATATONIC FORM, OF THE TYPE OF DEMENTIA PRÆCOX.

(346) **(Étude clinique et anatomique d'une psychose toxi-infectieuse à forme catatonique du type de la démence précoce.)** CLAUDE and ROSE, *Soc. de Psychiat. Paris*, Nov. 19, 1908.

CLINICALLY, general slowness of cerebration, with ideas of persecution, followed by a state of melancholy with graphic stereotypies. Later, accentuation of mental torpor, almost complete bodily immobility during eighteen months, flexibilitas cerea, some negativism. No marked intellectual defect, no dementia, properly speaking; akinesia, analgesia, obvious suggestibility, stereotyped movements.

Anatomically, œdematous subarachnoid exudate, chronic patchy meningitis over frontal, rolandic and paracentral convolutions, not elsewhere; in some places, small meningeal hæmorrhages; considerable alterations in the cells of the cortex, chiefly the large pyramidal cells, proliferation of neuroglial cells, neuronophagia; cerebral œdema chiefly in the molecular layer; perivascular infiltration; foci of encephalitis in the corpus callosum; global cerebellar atrophy, with diminution of the granular layer and degeneration of the Purkinje cells; slight leptomeningitis of the spinal cord.

The authors regard the case as one of chronic meningo-encephalitis of autotoxic (tuberculous) origin. S. A. K. WILSON.

DEMENTIA PRÆCOX OF CEREBELLAR TYPE. DUFOUR, *Soc.*
(347) *de Psychiat. de Paris*, Jan. 21, 1909.

IN a case of dementia præcox with catatonia, the author describes certain symptoms presumably of cerebellar origin, viz., titubation with loss of equilibrium, difficulty in speaking, impairment of the power of making rapid successive movements of pronation and supination (diadochokinesis), and trembling.

S. A. K. WILSON.

ON THE USE OF CERTAIN NEW CHEMICAL TESTS IN THE
(348) **DIAGNOSIS OF GENERAL PARALYSIS AND TABES.** ERNEST JONES and G. W. ROSS, *Trans. of the Ontario Acad. of Med.*, Jan. 26, 1909.

AFTER reviewing the signs indicative of general paralysis that may be found on examination of the cerebro-spinal fluid, and the methods in vogue for determination of the same, the authors detail twenty-four cases in which the fluid had been examined by, amongst others, two new methods. These were the Noguchi butyric acid test and the ammonium sulphate ring test. A summary of the results and technique may be found in an article by one of the authors in the present number of the *Review*. AUTHORS' ABSTRACT.

JUVENILE GENERAL PARALYSIS. RÉGIS, *L'Encéphale*, Feb. 10,
(349) 1909, p. 97.

A CHARACTERISTIC clinical instance of this disease. In this case evidence of syphilis (congenital) is found in (*a*) the teeth of the patient, which are Hutchinsonian; (*b*) paroxysmal hæmoglobinuria; (*c*) a positive Wassermann reaction. Further, the patient has had practically spontaneous fractures of the femur and humerus.

S. A. K. WILSON.

TREATMENT.

THE RÔLE OF ISOLATION IN THE CURE OF FUNCTIONAL
(350) **NERVOUS DISEASES. (Le Rôle de l'isolement dans la cure des Psychonévroses.)** PAUL-VALENTIN, *Gaz. Med. de Paris*, April 1909.

STARTING from the definition of a normal person as one who is capable, willingly or unwillingly, of adapting himself to the environment which his ancestors have prepared for him, the author of this article gives a brief classification of functional nervous disorders. He considers that many of such cases, the victims of an inherited weakness of nutrition, suffer from a chronic auto-intoxication due to various gastric or intestinal disorders.

His treatment of functional nervous diseases seems to be on the lines now generally prevailing. Convinced as he is of the necessity for isolation, he considers the treatment should not end when symptoms have been allayed, but that the " nevrose," before being turned adrift to face the flowing tide of mental and moral adversity, should be " hardened " in a " sanatorium of normal life."

C. T. HAND NEWTON.

TREATMENT OF GRAVES'S DISEASE WITH THE MILK FROM (351) THYROIDLESS GOATS.

WALTER EDMUNDS, *Lancet*, Jan. 25, 1908, and April 10, 1909.

FOLLOWING the treatment originated by Lanz, the milk from thyroidectonized goats was given to a series of cases of Graves's disease. Altogether fifteen cases were treated, with the result that none of the cases died, and all but two were better after the treatment: of these two, one had had the disease for fourteen years; and the other, although no better after the treatment during two summers, yet seemed better while taking the milk than in the winter, when none was available. The improvement in many of the other cases might be attributed, no doubt, to rest and good food in hospital, but two of the cases were treated wholly at home, and one case, though in hospital, continued to get worse till the milk was given, when she greatly improved. On the question of operation in these cases no opinion is here expressed, except that if operation is to be had resort to it should be performed fairly early; but it is pointed out that there are some cases which seem too mild for operation, while there are others which are too severe.

AUTHOR'S ABSTRACT.

THE X-RAY TREATMENT OF EXOPHTHALMIC GOITRE. (352)

C. THURSTAN HOLLAND, *Proc. of the Electro-Therapeutical Section of the Roy. Soc. of Med.*, Feb. 1909, p. 79.

THIS paper deals with the results of this method of treatment in a series of six cases in which it was possible to carry it out efficiently. Several of the cases were very bad indeed, one desperately ill. In all there was marked improvement from the very first, whilst in the very bad case it seemed certain that X-rays had actually saved the life of the patient. The case was a remarkable one, the woman having been in hospital for some months, getting worse all the time, before X-ray treatment was started. When it was started she was almost too ill to be taken across the passage to the X-ray room, and she weighed only 4 st. 9½ lbs. She improved from the start, immediately began to put on weight, and finally left the hospital on a fair way to complete recovery. The author lays stress on the importance of giving a sufficient X-ray dosage, of protecting the skin over the area exposed, of only treating one side of the gland energetically, and of the absolute necessity of careful medical supervision of the exact methods of the treatment.

AUTHOR'S ABSTRACT.

A CASE OF DECOMPRESSION FOR CEREBRAL THROMBOSIS.

(353) J. J. THOMAS and LUND, *Journ. of Nerv. and Ment. Dis.*, March 1909, p. 150.

THE case reported was that of a woman, aged 33, who two days after delivery was admitted in a state of coma. There was some twitching on the left side, and also evidences of hemiplegia there. The patient's condition was desperate, and a decompressive operation was rapidly performed under ether. The œdema was relieved and the patient made a good recovery. She left the hospital with no trace of hemiplegia. Since then the hernia has subsided, but she has had two fits. The authors add some interesting general remarks on the subject. They say the case recorded was one of embolism, so that the title of their paper is misleading.

ERNEST JONES.

THE OPERATIVE TREATMENT OF POTTS' PARAPLEGIA.

(354) **(Operative Behandlung der Paraplegien bei tuberculöser Spondylitis.)** M. A. WASSILIEW, *Arch. f. Klin. Chir.*, Bd. 88, Heft 3, p. 845.

THE writer distinguishes three factors as causes of compression of the cord in tuberculous spondylitis: (1) compression by bone, (2) peripachymeningitis, (3) abscess. The third factor he considers to be of much more frequent occurrence and of far greater importance than the two former ones. Statistics show that abscess formation occurs in from 86 per cent. to 99 per cent. of all cases of Potts' disease, the abscess being almost invariably prevertebral in position. The purulent content of such an abscess is under considerable tension—from 12-30 mm. of mercury. A prevertebral abscess in the cervical or lumbar region can readily make its way to the surface, but in the dorsal region it is otherwise.

Now in over 90 per cent. of all cases of Potts' paraplegia the tuberculous disease is in the dorsal vertebræ, and the prevertebral abscess bulges into the posterior mediastinum.

In the writer's opinion operative treatment for the paraplegic condition must aim at draining this abscess and thus relieving tension. Costo-transversectomy, therefore, and not laminectomy, is the rational operation for such cases. The former operation consists in the resection of the vertebral ends of two ribs and of two transverse processes in the affected region of the spine and drainage of the prevertebral abscess. The writer performed this operation on five cases of Potts' paraplegia. In four cases complete recovery ensued; in one case where, in addition, laminectomy was performed there was a fatal result.

Ménard reported twenty-four cases in which this operation was performed with a successful result in nineteen cases and a fatal issue in five cases. The statistics in regard to laminectomy for this condition show that, in 405 cases so treated, recovery followed operation in only 19 per cent., no improvement resulted in 34 per cent., and in the remaining 47 per cent. the result was fatal. The writer recommends early operative interference in all such paraplegic cases, but does not consider paralysis of the bladder as a contraindication to operation. D. P. D. Wilkie.

Reviews

ESSAI SUR LA PSYCHOLOGIE DE LA MAIN. Par N. Vaschide. Rivière, Paris, 1909, pp. 504, Fr. 12.

For M. Vaschide the hand is essentially the organ of muscular sense, for he is convinced from his experimental work of the existence of a muscular sensibility distinct from all others, and for this the hand is the chief organ. He has certainly brought together in this work a wealth of information on the hand from the most diverse sources, and it bears evidence of wide reading and long study. A brief mention of the various headings will give some idea of its scope. We have first of all chapters dealing with the divinatory cheiromantic sciences and their empirical attributes. A chapter on the canons of art as applied to the hand reveals the varied conceptions of beauty and incidentally contains a most vivacious description of the most beautiful hand the author has seen. The hand as portrayed in works of art from every age is illustrated by a number of examples—the well-known hands of Dürer are, curiously enough, not even referred to. Short sections on the anatomy and physiology follow, and then a lengthy exposition of the study of finger prints. For the practising physician there is a fine collection of photographs and sketches of almost every pathological condition of the hand, including a number of stigmata of degeneration, and also a long chapter on writer's cramp and its treatment.

The hand is studied from an anthropological and psycho-social point of view, and an analysis made of the psychical information to be gained from a hand-shake. His experimental researches deal largely with the methods of the "cheiromanciennes"—vulgarly called palmists. From a careful study of their divinations, controlled by precise personal observations, he would not include "palmistry" among the exact sciences, and is particularly sceptical with regard to revelations of the future. But to a skilled observer, the reading of character and telling of past events in a general way is fairly easy, although it is done not merely from the lines on the hand—its whole architecture, as well as the person's manner, dress, mien, speech, etc., yielding data to the diviner. His experiences amongst this undoubtedly clever class of persons had led him to promise us a further work on intuition—the possibility of thinking without an image—but the promise will, unhappily, never be fulfilled, as the gifted psychologist died within a few days of his finishing the present work. J. H. HARVEY PIRIE.

DER ANTEIL DER FUNKTION AN DER ENTSTEHUNG VON NERVENKRANKHEITEN. LUDWIG EDINGER. Wiesbaden: J. F. Bergmann, 1908, M. 2.

IN this book of sixty-seven pages the author has collected the substance of his various works upon the part played by exhaustion (*Aufbrauch*) on the etiology and the development of nervous diseases. About a quarter of the book, however, is entirely new, and is concerned partly with fresh observations and partly with the discussion of various criticisms that have been made upon his theory. The work contains six chapters: upon (1) the toxic hypothesis and the function hypothesis of the causation of nervous diseases; (2) the exhaustion of the normal nervous system; (3) the abnormal exhaustion of the peripheral nervous system (neuritis); (4) congenital and hereditary nervous diseases; (5) exhaustion of the spinal cord owing to diminished resistance due to disease; and (6) post-toxic and especially post-syphilitic nervous diseases.

The theories of Edinger have now entered so largely into the literature of neurology that everyone interested in the subject should form his own conclusions from a perusal of the work as to how far the author has succeeded in proving his thesis. His conclusions may be summed up as follows: In healthy individuals exhaustion of the nervous system is shown histologically by the disappearance of the Nissl granules within the cells and by the formation in the medullated fibres of granules which may be detected by the use of osmic acid. If the exhaustion reaches a degree so marked that there is no sufficient compensation, complete destruction of cells and fibres must follow. Weakened and destroyed nervous tissue is replaced by the growth of neuroglia. Exhaustion diseases are all more or less progressive. Many continue till there is a complete destruction of the injured tracts, especially of those which are weak in certain parts from hereditary disposition, because function is never discontinued, and because, when some parts are injured, others have to work the more. Exhaustion diseases arise (1) because abnormally high demands are made upon the normal tracts and normal function (this occurs in the atrophy and neuritis due to occupation); (2) because there is not sufficient compensation for normal function. In this case there is nearly always some associated toxic-action, such as syphilis, lead, etc. In such cases the exhaustion of the nervous system will vary according to the kind of the poison; (3) because some tracts are congenitally not sufficiently strong to bear prolonged normal function.

The need to protect from all possible exhaustion in the treatment of nervous disease is emphasised by the author, and has been carried into practice by him with the best results. Edinger has rendered a great service to neurology in bringing this therapeutic indication so prominently before the notice of the profession.

ALEXANDER BRUCE.

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Review
of
Neurology and Psychiatry

Original Articles

MICROCEPHALIC IDIOCY.

By HAMILTON MARR, M.D., F.F.P.S.G.,
Medical Superintendent, Glasgow District Mental Hospital, Lenzie;
Mackintosh Lecturer on Insanity, St Mungo's College, Glasgow.

(With Plates 8, 9 and 10.)

THERE are wide differences of opinion regarding the limits and nature of microcephalic idiocy. Ireland applies the term to every case of idiocy in which the circumference of the head is below 17 inches, or 431 mm. Broca is of opinion that the weight of the brain is of more importance in such cases, and calls brains, which, in the case of males, weigh 1049 grammes, and in the case of females, 907 grammes, microcephalic. Giacomini makes a distinction between brains primarily affected by a morbid process, those in which there is no pathological taint, and those in which there is a combination of these two conditions, the pathological process being superadded to a primary microcephalic brain. The first of these two groups Giacomini names "pseudo-microcephalic," the second he designates "microcephalic proper." In an elaborate memoir on "The Brain of the Microcephalic Idiot," Cunningham and Telford Smith accept Giacomini's classifications. Further, they are of opinion that microcephalic brains should be classified according to the morphological features they possess. A classification based on morphological features is, however, as illogical as a classification of a disease based on symptoms. On analysis of the numerous cases of microcephalic idiocy recorded it is found that the brains invariably present human characteristics, and are not atavistic, or of a type inherited from some remote ancestor. If the microcephalic brain was of an atavistic nature, there might be some grounds for accepting a classification on a morphological basis.

Microcephaly is invariably intra-uterine in origin. It takes place during the development of the nervous tissues. The mass of the brain and the variations in its convolutions and sulci are all conditioned by a greater or less development of the cerebral neurones and the subsequent myelination of their axis-cylinder processes. Again, the failure of operative procedure to influence brain growth in microcephaly is generally accepted as evidence that the premature closing of the fontanelles and cranial sutures is the result of defective brain development. The term "microcephalic idiocy" seems more applicable to cases in which the circumference of the cranium falls below 17 inches, and where the weight of the brain is within the limits suggested by Broca.

The case of A. B., a microcephalic idiot, admitted to the Glasgow District Mental Hospital at Woodilee on the 3rd October 1903, illustrates this contention. The history of A. B., when in the Glasgow Royal Infirmary, has been kindly given to me by Dr John Barlow, who performed the operation of craniectomy on the patient. The facts of the case are as follows:—

A. B., male, aged 4 years, was admitted to the Royal Infirmary, Glasgow, on the 18th November 1899.

At the birth of the patient it was noticed that there were no fontanelles. The child had never been able to speak. The mother stated that the child, on seeing his father enter the house, could recognise him, the mode of recognition being that he made some inarticulate noises, moving his hands apparently in a gleeful mood. She also said that he refused to sleep unless he lay beside his father. After coming into hospital similar demonstrations of apparent recognition at the approach of various persons were noticed. The patient slept very well alone.

Examination showed that the patient could not stand. His legs were sometimes in a restless condition, and he occasionally took the bedclothes off himself. The legs were usually more or less flexed and stiff. The plantar reflex was present. There were no knee jerks. The patient's hands were usually closed, and his mother stated that when he tried to take hold of anything his hand usually closed before it reached the object he wanted to grasp. He had an internal squint of the left eye. The pupils responded to light and in accommodation. He had always had an unusually large amount of hair. All the sutures were closed. The head was small, and the following measurements were taken and compared with those of another child of four years, who was in the ward at the same time:—

	A. B.	Normal Child.
1 in. behind external angular process	4 ins.	4¼ ins.
Bi-parietal	4¼ ,,	5⅜ ,,
Bi-mastoid	4⅛ ,,	5 ,,
Glabella to Ex. Occ. Protub. . . .	6⅛ ,,	7 ,,
Do. do. over vault	10½ ,,	12 ,,

The child had to be fed with a spoon, which required to be put well back into the mouth. There was no history of fits. No localised sign of pressure could be detected. The nurse was not able to feed the patient with solids; fluids ran over the mouth, unless put well back. When he thought he had had enough food, he shut his mouth, refusing to take more. When meal time came he cried and kicked until he was put up at table. He never chewed his food. He refused to take any other food if fish was on the table. When given castor oil he spat it out. He never tried to smell anything. If he saw anything that interested him, he opened his eyes and mouth. When the piano was played he laughed and kicked, and swung his body as if keeping time to the music. He occasionally played with toys. He cried if scolded or whipped. He passed urine and fæces without warning. He was very often constipated.

On the 23rd November 1899, under Ch. Cl.$_3$, Dr Barlow performed craniectomy, removing longtitudinal strips of bone from the right side of the cranium, and a transverse piece from it to the other side of the middle line. The patient required very little Ch. Cl.$_3$, a few drops being sufficient to put him under again when coming out of it. The time of the operation was twenty-five minutes. After the operation, and until the 4th December 1899, the patient seemed somewhat more lively. He manifested signs of pleasure and displeasure at the approach or interference of any person. He cried when hungry, and would not take any more food when he thought he was satisfied. The pulsation of the brain was seen through the craniectomy wound. On the 5th December 1899 Dr Barlow did linear craniectomy of the other hemisphere. The patient required on this occasion more Ch. Cl_3 to go under, and to be kept under, than he previously required. After the operation the child slept for some hours. During the operation he appeared quite bright, and showed no sign of suffering from shock. There was no vomiting or apparent sickness. He was given milk at 1 p.m., which was retained. The next day the patient kept as well as could be expected. Later the stitch in the left side was removed. The wound healed by first intention. No dressing was put on. The patient was discharged from the infirmary on the 20th December 1899. On the 18th January 1900 the mother reported that the child was able to sit more easily, and did not require to be supported. She said he made an attempt to catch objects with his left hand : he never did this before the operation. Rigidity of the lower extremities was less marked.

A. B. lived at home with his parents until the 3rd October 1903, when, at the age of 8½ years, he was admitted to the asylum at Lenzie.

On admission he weighed 22 lbs. The limbs maintained flexion. The reflexes and electrical reactions were normal, but sluggish. There were scoliosis and some degree of kyphosis, with resulting deformity of the chest. The palate was high and narrow, and the teeth markedly defective. The lobes of the ears were wanting. The left ear was shorter and less prominent than the right. The testicles were rudimentary. The following were the cranial measurements :—

Length of head . .	15·5	cm.
Breadth of head . .	10·75	„
Height of head . .	10·7	„
Circumference of head .	43·1	„

In addition to the history above detailed, the father ascribed the condition of the child to difficult labour. The mother was in labour for three days. The defective condition was first noticed when the child was three months old. He never walked, and after the operation he seemed more fractious, and was jealous of any attentions shown to his brothers and sisters. This he showed by crying. Otherwise there was no change in his mental condition. He was never able to masticate his food, but sucked it like an infant. He died on the 28th November 1906.

The conditions found on post-mortem examination were as follows:—The skull-cap was unusually thick in the frontal region, being $\frac{6}{16}$ in., as compared with $\frac{3}{16}$ in. in the parietal and occipital regions. Its density was also markedly increased at this part.

The shape of the skull was dolico-cephalic, measuring $4\frac{3}{16}$ ins. by 6 ins., in its widest diameters. The skull was markedly asymmetrical, the left half being more capacious than the right, especially in the occipital region. At the skull base the same asymmetry was noticed, but here the right side was more capacious than the left.

The dura mater was thickened, congested, and presented slight adhesion to the skull-cap. The sinuses were normal. The pia arachnoid was normal, but was slightly congested, and showed slight adhesion to the cortex.

The brain was small; the cerebral convolutions did not cover the cerebellum, but left it exposed to the extent of $\frac{1}{4}$ in. posteriorly. The brain surface showed marked microgyria. The extent to which the convolutions were affected is clearly seen in the accompanying photographs. On the external surface the microgyria was not symmetrical. Both projection and association areas were involved, and on the left side the parietal lobe was more deeply involved than on the right. Greater symmetry was in evidence in the mesial surface, where the parts affected were the greater part of the supra-marginal convolution and the posterior parts of the frontal convolutions. The base of the brain showed the slightest departure from normal. In the anterior part of the frontal lobes on each side there was well-developed microgyria. The island of Reil presented an apparently normal appearance. The corpus callosum was normal and well-developed, as were also the corpora striata and optic thalami, which were comparatively of large size. The basilar artery was of very small calibre, and the vessels entering into the formation of the circle of Willis were equally small. The olivary bodies were unusually large. The spinal cord was much reduced in size, and the dura mater excessively thick. The cord measured 17 cm. in length, and in the lumbar enlargement was 1 cm. in breadth. In the thoracic region it measured 8 mm. There was no apparent abnormality of the cranial or spinal nerves. The cerebrum weighed 16 ozs., and the cerebellum, medulla and pons, 4 ozs.

The heart was extremely small. It weighed 2½ ozs. Its musculature was of good consistence, and the conditions of the cavities and valvular apparatus were apparently normal.

The most noteworthy condition found on post-mortem examination, apart from the state of the nervous system, was the asymmetry of the cranial cavity. There was marked bulging in the region of the right parietal lobe; the left half of the occipital bone was carried further back, and had a deeper curve than the right half. The anterior fossæ were very shallow, the orbital plates being dome-shaped. The frontal bone was of great thickness. The middle fossa was likewise very shallow, and in marked contrast to the deep, well-formed posterior fossa. The adhesions of the membranes were all in the region of the openings of the cranial bone, the result of operative procedure.

A microscopical examination of the well-developed convolutions showed that the cells in all the layers of the grey matter were well-developed. There was an increase in the number of neuroglial cells, which showed extensive proliferation. These neuroglial cells had, in some cases, a few fine unbranched processes. None of these processes were, however, attached to the vessels. The majority of cells consisted of small rounded nuclei. The nerve fibres in these convolutions were fairly numerous and myelinated. The pyramidal cell layer was, compared with the normal, comparatively small. In the smaller convolutions the increase of the neuroglia was not so marked. Many of the nerve-cells presented a shrunken appearance, and did not stain well. This was specially the case with reference to the pyramidal layer, which was markedly reduced in extent, as were the cells in number. The nerve fibres showed a corresponding diminution, and in some of the smallest convolutions were scarcely represented.

In addition to the microencephaly there was micromyely. This condition, as the several sections of the spinal cord showed, was entirely due to the absence of nerve fibres. The diminution in bulk was general, and not confined, as in cases noted by some authors, to certain tracts of fibres. The anterior and posterior cornual cells were present in smaller numbers than normal: they represented no degenerative or pathological changes. A number of pin-point spots were seen in the sections, extending throughout the whole cord, and not confined to the white matter. These stained black with osmic acid, and were evidently the result of fatty degeneration of the myelin sheaths of the nerves.

The abnormal microscopical findings thus detailed were not influenced by any particular blood vascular supply; they were not limited to the distribution of any one artery. In all the areas examined the neurones were well-developed, with the exception of the pyramidal layer of cells, which normally should be three or four times larger than the other layers. The neurones present in these regions had their axis cylinders well-developed and myelinated. In the smaller convolutions the neurones were badly developed, and especially the comparatively few pyramidal cells. They all showed retrograde changes, in the absence of the cell processes, both protoplasmic and axis cylinder, and stained with difficulty. The absence of myelinated fibres in these convolutions is very striking, and points to a grave interference with myelination of the axis cylinder processes.

In accordance with the researches of Flechsig, the axis cylinder processes of the nerve cells within the brain and spinal cord receive their myelin sheaths at different periods in their developmental history. As far as the cerebral lobes are concerned, myelination begins from two and a half to three months before normal birth, and is continued until one month after birth, according to the several areas recognised. The convolutions affected in the case under consideration are included in Flechsig's pyramidal, intermediate and terminal areas. The conditions found would, therefore, be inaugurated a few months before birth, *i.e.* at the time during which the pyramidal or primary areas normally attain complete development. This interference with myelination and the full development of the neurones has had a marked effect on the development of the pyramidal layer of cells, particularly in the smaller convolutions. These cells, according to Bolton, develop *pari passu* with the evolution of the mental faculties. No definite cause can be assigned for this interference with the development of the cerebral neurones.

The family history and the personal history of the mother reveal no evident illness during pregnancy. One point, however, is worthy of consideration, viz., the state of the cortical blood vessels, the larger vessels entering into the circle of Willis, and the unusually small size of the heart. Everywhere the vessels were abnormally small and defective. The minute cortical vessels do not penetrate the cerebral cortex until the later months of pregnancy, and if these, for some unexplained reason, were defective, and thus furnished an insufficient nourishment, myelination would naturally be affected.

The pathological conditions often referred to in cases of microcephaly were in this case limited to the proliferation of the neuroglial elements. In no sense of the term, however, could this state of the neuroglia be considered as one of gliosis or the neurological conditions found in inflammatory and degenerative states of the brain in the insanities. The condition of the neuroglia seems rather to be an effort to compensate for the defective development and absence of the cortical neurones.

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DESCRIPTION OF FIGURES.

Fig. 1.—Case of A. B. Superior surface of brain.
Fig. 2.—Case of A. B. Base of brain.
Fig. 3.—Case of A. B. Hemisphere. Mesial surface.
Fig. 4.—Case of A. B. Hemisphere. External surface.
Fig. 5.—Skull cap. Showing results of operative treatment.
Fig. 6.—Sections of convolutions—(*a*) microgyrous; (*b*) well-developed.
Fig. 7.—Photomicrograph of cortex from well-developed convolution—(*a*) external surface of cortex; (*b*) internal surface of cortex.
Fig. 8.—Photomicrographs of cortex from microgyrous convolution—(*a*) external surface; (*b*) internal surface.

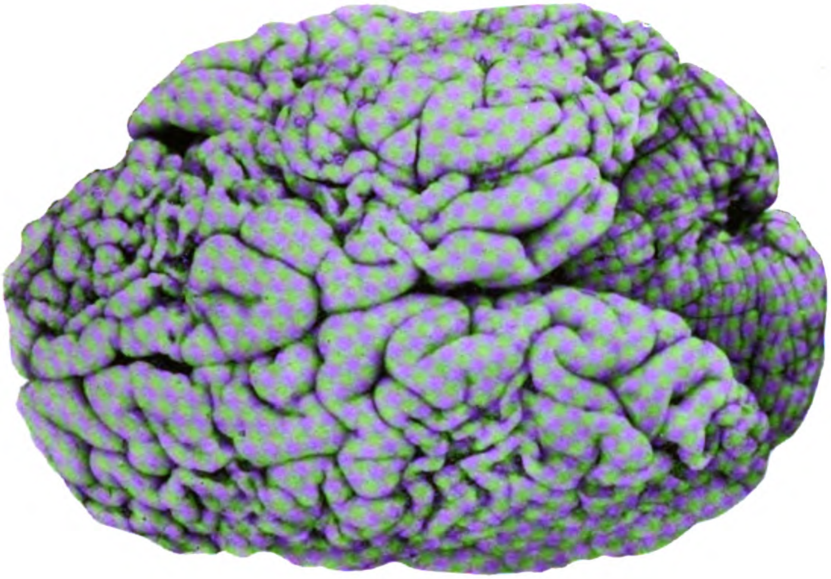

FIG. 1.

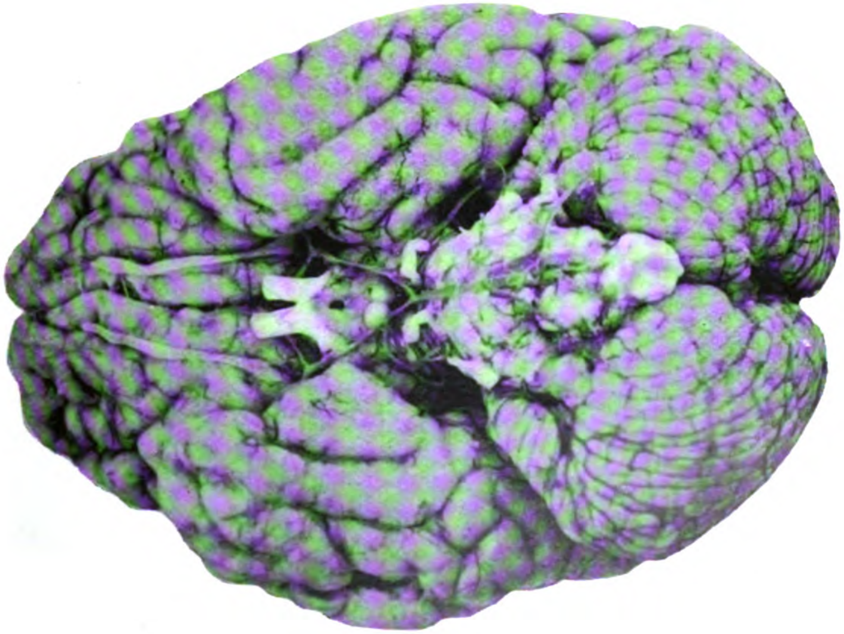

FIG. 2.

To illustrate Dr Hamilton Marr's Paper.

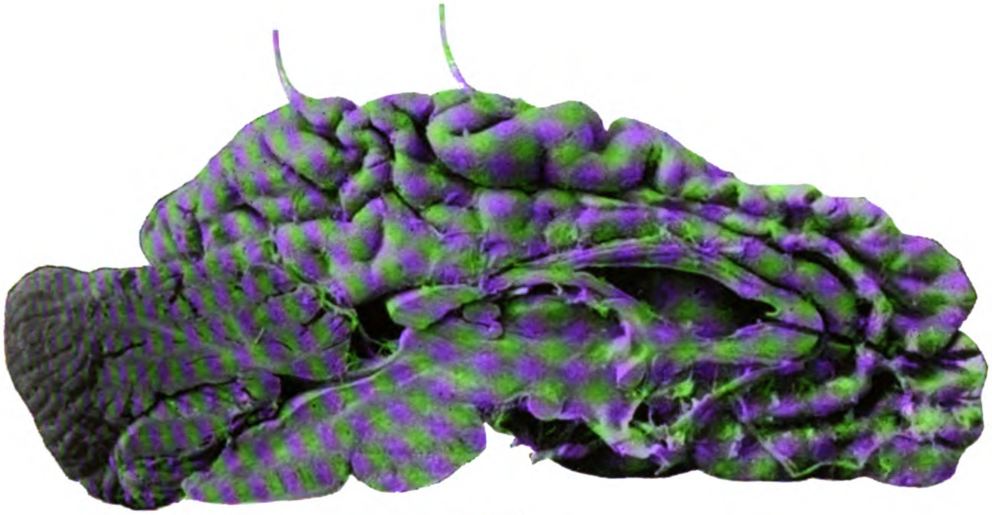

FIG. 3.

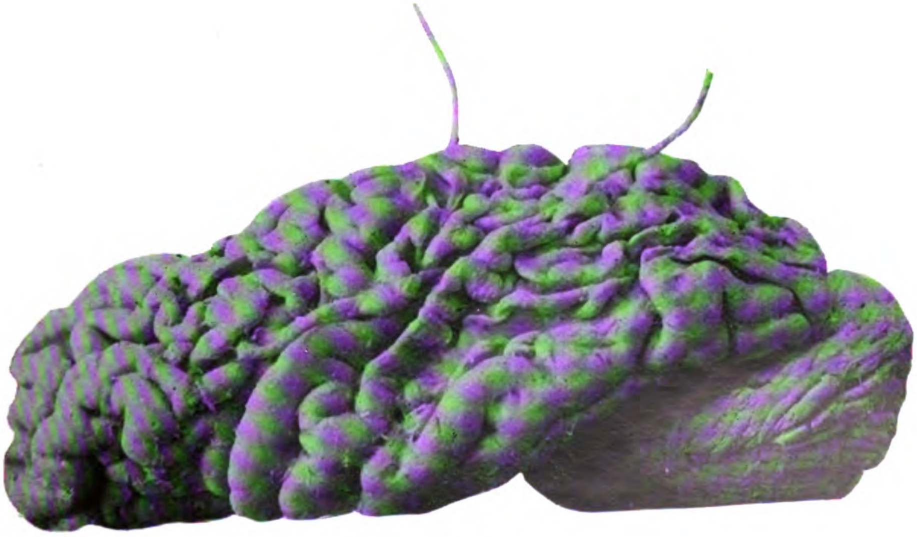

FIG. 4.

To illustrate Dr Hamilton Marr's Paper.

PLATE 10.

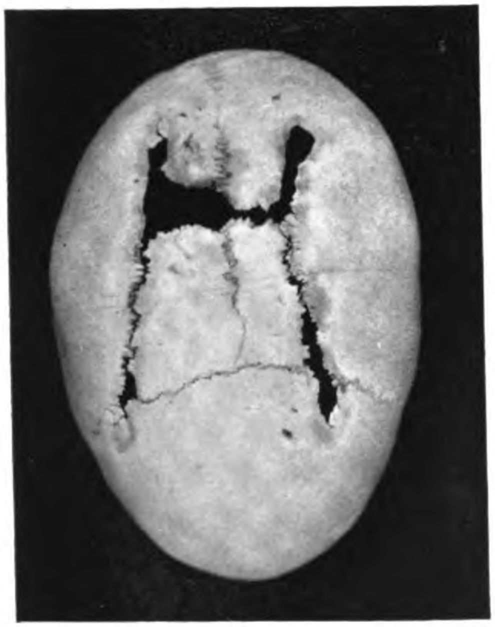

FIG. 5.

FIG. 6.

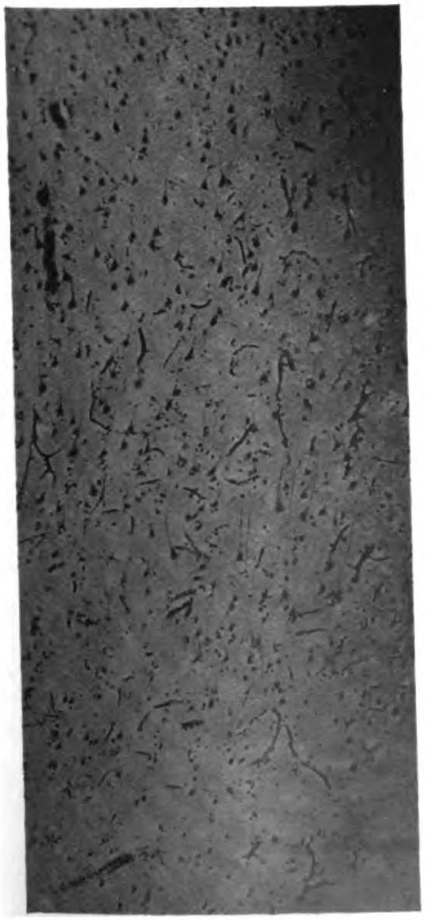

FIG. 7.

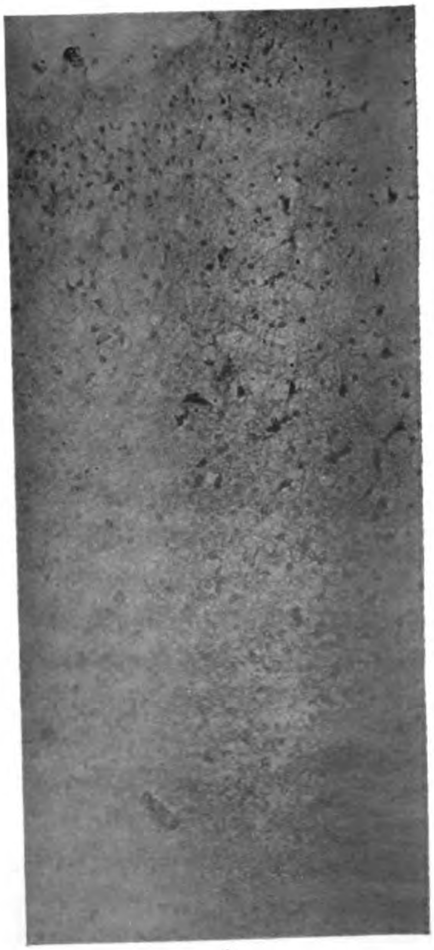

FIG. 8.

To illustrate Dr Hamilton Marr's Paper.

EPITHELIOMA OF THE HYPOPHYSEAL DUCT.

By GEORGE MACKAY, M.D., Senior Ophthalmic Surgeon, and ALEXANDER BRUCE, M.D., Physician to the Royal Infirmary, Edinburgh.

(With Plates 11, 12 and 13.)

THE following case of tumour of the pituitary body seems sufficiently remarkable both from its clinical features and its morbid anatomy to warrant publication in the *Review*.

The patient, W. T., aged 16, clerk in a business office, was referred to Dr George Mackay on March 4th, 1908, by Dr William Stewart of Leith, and subsequently placed under the care of Dr Bruce. The history of the case, as obtained from the notes taken by the writers, is as follows:—

About six years previously some tubercular deposit about the lower end of the right femur was operated upon and removed by Dr Stewart. The patient made a good recovery, but had a limited power of flexion of knee and a slight limp. He had otherwise enjoyed fair health, though he was never very robust. In August 1905 he began to be troubled with headaches, without any obvious cause in the form of illness, accident or overwork. At first these were not constant, but from the beginning of 1906 they recurred almost daily, especially in the morning. The pain was generally at the back of the head, but sometimes came forward to the forehead. It was not accompanied by vomiting unless very severe. In the autumn of 1906 he entered a seed-merchant's office as clerk, but found the work too heavy. Three months later he was able to secure a situation in a wine merchant's office, where his duties were less confined and more varied, so that he was able to be more in the open air. For three months before coming to Dr Mackay he had noticed that his vision was defective.

March 4th, 1908.—External examination: Nothing abnormal save that the pupils were rather wide. They responded to light and on convergence. R.V. = 6/60, slightly improved with - 1D sph. Read J14 slowly. L.V. = 6/60, doubtfully improved with - 1D sph. Read J20 badly. Examination of the fields of vision revealed a complete temporal hemianopia of the *right* eye. Could neither count fingers nor even appreciate hand movements on the temporal side of the middle line, while the nasal field was good for form and colour. With the *left* eye, fingers could not be counted, but hand movements were vaguely perceived in the temporal half field. In the *left* nasal field colours were correctly perceived, but neither perception of form nor colour seemed to be quite so acute as in the *right* nasal half field. The usual difficulty was experienced in mapping the actual line of demarcation between the affected and the unaffected parts near the middle line. Ophthalmoscopically—media transparent; both discs pale as if partial atrophy threatened.

On March 5th, 1908, at Dr Mackay's suggestion, Dr Logan Turner kindly examined the patient at the Royal Infirmary for possible evidence of trouble in the nasopharynx or accessory sinuses, but none was found.

On March 18th, 1908, he was admitted to the Eye Wards of the Royal Infirmary.

On March 20th he was referred to Dr Bruce, and lumbar puncture was performed, but no fluid was obtained.

On March 26th Calmette's ophthalmo-reaction was applied to his left eye, and on March 28th gave a positive result. There was no rise of temperature. The diagnosis of some tubercular disease, probably periostal in the sella turcica, seemed justifiable and was made.

The patient improved somewhat, had fewer headaches, and on dismissal, on the 17th of April, he was sent to the Convalescent Home for three weeks, taking cod-liver oil emulsion. He returned from there, looking much stronger and tanned with the sun, and he had put on three pounds in weight. His vision had also improved: R.V. with - 1D sph. = 6/36. Read some of J12. L.V. with - 1D sph. = 6/18 and J4. The improvement was maintained throughout the summer, and he returned to work.

In June 1908 he first noticed a peculiar discharge which sometimes came down the back of his nose. This appeared to be quite different from the usual nasal secretion, so that he always recognised it by the taste, but it had no disagreeable smell. It appeared every day, but usually not more than once a day, and when expectorated had a peculiar thick whitish appearance. This had continued to appear up till his admission to hospital. It is not increased in amount by any posture.

On October 16th, 1908: R.V. with - 1D sph. = 6/24 slowly. L.V. with - 0 5D sph. = 6/18 and some of 6/12. There was occasionally slight morning headache, but otherwise he was well and at work.

There is a history of his having fallen in the street in a fit, but details as to its nature and exact date are wanting.

On December 1st, 1908, his eyes again began to become weaker and his headaches to be more severe. He went back to see Dr Mackay on December 11th, 1908. On the 15th he saw Dr Bruce and was admitted to his ward on December 16th.

The following notes were taken by Dr Godwin Greenfield:—

On examination the patient was found to be a well-grown lad, tall but slightly built. The expression of the face was one of dulness and apathy. He seemed disinclined for conversation or any mental exercise, but was intelligent and evidently well-educated. There was slight head-retraction. The eyebrows were slightly raised, as if from headache, and the jaw, which was long and rather low-set, was kept slightly open. At intervals, when the pain was more than usually severe, he threw back his head and looked upwards as if in agony, while the mouth was rather more widely open than before. The eyes were sometimes opened wider than usual and sometimes half-closed during these attacks. They conveyed the impression of great pain of a wearing, exhausting nature. The eyes were steady, and except for a heavy, sleepy look, and more than usually long eyelashes, gave no evidence of his condition. The nose was well formed. There was no evidence of nasal catarrh, and no disagreeable odour was perceived in the breath.

The right knee-joint was almost completely ankylosed from old tuberculous disease occurring when he was five years old. The scars of sinuses were seen about the joint, which was slightly flexed and ill-shaped, with considerable thickening over its inner side. There was very considerable atrophy of the muscles of the right leg and thigh.

The chest was well formed, except for a flattening on the right lateral aspect, due to the use of a crutch since he was five years old.

The supra-clavicular fossæ, especially that on the left side, were slightly hollowed, and there was evidence at both apices of tuberculous consolidation, which seemed to be progressing slightly at the right apex.

The heart and circulatory system appeared normal.

The urine showed no abnormal condition.

Examination of his nervous system showed complete bilateral hemianopsia, but no other contraction of the field of vision. Vision on the nasal side was poor, being $\frac{6}{18}$ in the left eye and $\frac{5}{60}$ in the right.

No paralysis or weakness of any of the external or internal muscles of the eye could be discovered. There was no paralysis of face or tongue. Except for the weakness of the right leg, due to the condition of the knee, the power of the limbs was intact. No change of sensibility of the skin could be made out. Taste and hearing were unimpaired. The sense of smell was very deficient in both nostrils, and was practically absent in the right.

The reflexes of the upper limbs were active, but not increased. No scapular jerk could be elicited. In the lower limbs the reflexes were much increased; adductor and crossed-adductor jerks were present on both sides. The left patellar reflex was much increased, but there was no great contraction of hamstrings following it. A slight ankle clonus, which, however, could not be sustained for more than a few contractions, was elicited on both sides, more on the left than on the right. Of the superficial reflexes, the abdominal and epigastric were very difficult to elicit. The cremasteric was active on both sides, and the plantar was active and flexor in character.

The special discharge from the nose could not be isolated for examination.

Examination by Dr Logan Turner in the ear and throat department revealed nothing abnormal in any of the anterior sinuses, and no evidence of disease was seen by either anterior or posterior rhinoscopy.

After admission to hospital he was kept quietly in bed for a week, during which time his general condition remained much as before. The spasms of great pain were not quite so frequent, although very severe when they came on. He slept well, had a good appetite, and felt himself rather better than he had been previously. He was treated with 5 grains of potassium iodide thrice daily, and full doses of cod-liver oil and malt.

On December 22nd, after a week's observation in hospital, lumbar puncture was performed under local anæsthesia at 1 p.m. The fluid came off at high pressure, a continuous stream pouring out to a distance of about 4 inches from the end of the needle, although this was inclined point downwards. After about 10 c.c. had come off in this way, he complained of very great pain in his head and desired the nurse to hold it, and there was marked head retraction. On account of the pain only 20 c.c. were drawn off. An ice-bag was applied to the back of his neck, and he was given 20 grains of potassium bromide. The headache remained very severe, and he lay groaning but quite conscious. The cerebro-spinal fluid was then examined and found to be highly albuminous and to reduce Fehling's solution slightly. It appeared quite clear, but yielded a very slight sediment on centrifuging for half an hour, which was of a reddish colour, composed mainly of red blood corpuscles, with an excess of leucocytes, of which the lymphocytes outnumbered the polymorphs by three to one.

About half an hour after the lumbar puncture the patient vomited, but after this remained fairly quiet all afternoon, although suffering great pain. He fell asleep about 8 p.m., but awoke again at 9.30, complaining of great pain at the back of his head. His head twitched back very frequently, and he seemed to become slightly flushed during these attacks. Kernig's sign was slightly present. At 10 p.m. he was given a powder containing 3 grains of exalgin, 3 grains of caffeine citrate, and 10 grains of phenacetin, which relieved the headache, and he slept for about an hour and a half. He awoke at 12 p.m., but had not at that time much pain, and lay awake until 3 a.m., when, as he was again complaining of much pain, 20 minims of nepenthe were given. After this he only dosed for the rest of the night, but had less pain.

On the following day he was given 20 grains pot. bromide thrice daily. When seen at 11 a.m., he complained of a good deal of pain in the head, and head retraction was fairly frequent.

Kernig's sign was rather more marked than on the previous night, the knee only being extended to an angle of 135°, and this caused him some pain.

He had a good deal of pain in the head all the afternoon, but took his food well. About 7.30 p.m. the pain became very severe, so that he called out with it, and was given 30 minims of nepenthe, after which he slept soundly till 4.30 a.m., and fell asleep again shortly after.

On the 24th December he was very drowsy, and seemed to be sleeping nearly all the day. When roused up he said that his headache was much less severe. Head retraction was much less frequent, and he did not look so ill as on the previous day. He lay for the most part on the right side, with his head drawn slightly back, and the brow very slightly wrinkled. The eyes were shut, the eyebrows slightly raised, and the jaw hung slightly open. He slept soundly at night, waking only for short intervals, during which he complained of little headache.

On the 25th he was in much the same condition. When wakened and roused to speak he was quite rational and intelligent, but was usually very drowsy. He slept well again at night without any drugs.

There had been no difficulty with micturition up till this time, but the bowels were very constipated. From this time until the end he only passed urine when the bowels moved or from stimulation by hot cloths, and then in small amounts.

On December 26th he was very listless and drowsy, with the face slightly flushed and the tongue furred. He opened and shut his eyes listlessly, without seeming to take any note of his surroundings. There was slight difficulty in swallowing. He complained of no pain, and said that he was fairly comfortable. The pulse was rather faster, being 130 at 7 a.m.

When examined at 12.30 a.m. on the 27th the pulse was again slower—107 per minute. The eyes moved slowly from side to side, and the pupils reacted very sluggishly to light. The conjunctival reflex was diminished. The hands usually lay limply, but every now and again there were spasms running down the arm, causing a slight quivering. There was no evidence of paralysis of the face or limbs.

The reflexes were found as before, except the plantar reflex, which was now extensor in type. Head retraction was very slightly present, and Kernig's sign was more marked than previously. On account of the difficulty in swallowing, salines and whisky were given per rectum. At 2.30 a.m. the breathing became slightly Cheyne-Stokes in character; the pulse varied from 105 to 135, but was regular and of good volume.

At 3 a.m. he was given 3 oz. hot milk, which he took with difficulty, and went to sleep after it, and slept well until 4.15 a.m., when he awoke, complaining of pain. He dozed off to sleep again soon after, but at 5.30 was again awake, and complaining of his head. There were no twitchings of the head now, and no paralysis of the eye muscles could be observed.

At 7.45 a.m. he suddenly became very cyanosed, and died. There was no gurgling or gasping for breath, and death occurred in about three minutes.

Autopsy.—The base of the brain presented a very interesting condition. A large tumour, mainly cystic, was seen filling up the space between the tips of the two temporal lobes, the middle of the medulla posteriorly and the middle of the orbital surfaces of the frontal lobes. The cyst lay upon the optic chiasma and pressed upon it so that it could not be seen on the surface. It appeared to lie between the arachnoid and the surface of the brain. It had no apparent connection with the pituitary body, which merely lay upon the surface of its middle part. The surface of the middle part was nodular. A large cavity under the frontal lobe was opened during the removal of the brain and its contents escaped. The cyst wall had numerous minute nodules scattered over it, especially in the region of the chiasma. Their colour and firmness suggested that they were calcareous in nature (subsequent microscopic examination, see below, showed that they were really epithelial cell nests undergoing calcification). The membranes over the anterior surface of the pons and the medulla were thickened and a portion of the cyst extended backwards over the pons and medulla under the thickening of the arachnoid seen in Plate 11, Fig. 1. There was extensive absorption of the bone at the sella turcica, so that the sphenoidal cells were merely roofed in by mucous membrane, which Dr J. S. Fraser, who kindly examined it, reported to be practically normal. The nasal mucous membrane was in a state of catarrh. No affection of the spinal cord was discovered. Both lungs showed evidence of early phthisis at the apices.

Further examination of the brain.—On mesial section a tumour about 8 cm. long and 4·2 cm. in greatest breadth was seen occupying the whole of the third ventricle, displacing its lateral walls outwards, destroying both septa lucida and extending forwards so as to displace the orbital surface of the posterior part of the frontal lobe upwards. As shown in Fig. 2, its backward growth had displaced the crura cerebri and pons in such a manner that their posterior surface was almost at a right angle with the corpus callosum.

The upper part of that portion of the tumour which lay in the third ventricle was occupied by several large gelatinous masses of irregular outline. Two of these, which measured from about 18 to 20 mm. in their longest diameter, with intermediate smaller cysts, are well seen. They resembled the colloid substance in cystic tumours of the thyroid, but their nature, as will be seen later, was totally different.

The anterior portion of the lower half was occupied by a single large cyst, the contents of which, as already mentioned, escaped at the examination. Its lining membrane was studded irregularly by minute, opaque, whitish granules. (These can be seen with the aid of an ophthalmoscopic lens in Fig. 2.) The posterior part of the lower half of the tumour consisted of small cystic cavities with broad intervening trabeculæ which presented partly a gelatinous appearance and partly fine opaque whitish granules of apparently calcareous matter. These granules appear as the whitish portion between the large cyst in the posterior and the multilocular cysts in the anterior portion of the tumour. The part of the tumour which lay in front of the pons and medulla was a flattened cyst, which collapsed on being opened.

Microscopical examination.—The pituitary body itself (Plate 12, Fig. 4) seems quite normal. The following description of the tumour is taken from that part described as the posterior portion of the lower half (Fig. 2). Under the low power (Plate 12, Fig. 3) the growth resembles a cystic adenoma, but a careful examination shows that the cyst-like spaces, lined by an almost cylindric epithelium, are really formed by the connective tissue stroma between branching epithelial ingrowths — the several branches of which anastomose with one another. This connective tissue stroma is in all stages of mucoid degeneration (Fig. 3*a*, *a′*), so that "spaces" are formed, some with almost normal fibrous tissue, others with branching myxomatous cells, swollen and separated fibrils, and a mucoid ground substance, and still others where the mucoid transformation has been complete. It is these last which give at first sight the impression of a cystic tumour, but even these contain well-formed capillaries (Fig. 3*b*), which stand out clearly in the mucoid substance. A few of the spaces contain numbers of large, vacuolated, rounded cells. These are probably of a phagocytic nature, and are to be found to a smaller or greater extent in all the spaces, often grouped round capillaries (Fig. 5*a*). In a few of the larger spaces the mucoid material has either fallen out or been absorbed, and only swollen strands of connective tissue fibrils are left, together with a few lymphocytes and large granular cells (Fig. 3*a′*).

The branching epithelial ingrowths (*c c*,) show all stages of complexity, from the simple two-layered process covered only by the original germinal epithelium which adjoins the connective tissue to the ingrowths, consisting of several layers of epithelial cells, the outermost of which represent the germinal epithelium, and the inner ones, becoming flattened and cornified, form typical cell-nests (Fig. 3*d* and Fig. 5). In many of the spaces are found islands of epithelium showing all stages in the formation of cell-nests, many going on even to calcification (Fig. 6).

The calcareous granules in the wall of the large cyst which underlay the frontal lobe and formed the anterior portion of the lower half of the tumour proved to be epithelial cell-nests in process of calcification.

It will thus be seen that the diagnosis of the site of the lesion, but not that of its nature, was confirmed. The bitemporal hemianopia seemed to put beyond doubt that there was a pressure on the optic chiasma. On the other hand, the evidence obtained by Calmette's reaction was altogether deceptive. Its results merely indicated that the patient was tuberculous ; they did not tell where the tuberculosis was situated, and in this case it was not in the brain, but was in the lung. The two conditions—one of epithelioma, the other of tuberculosis—co-existed ; the tuberculosis in the lung spoke, but the tumour of the hypophysis was silent.

As already stated, the pituitary body itself was found to be quite normal both as regards its glandular and its nervous portions, as well as in the lining membrane and form and contents of the epithelial cleft. No connection beyond that of a fibrous-tissue nature could be made out between the pituitary body and the tumour. Although no further connection could be traced, it appears to us probable that the tumour must have arisen from some aberrant portion of the wall of that part of the ectoderm of the original embryonic buccal cavity which goes to form Rathke's pouch. The epithelial cells lining this pouch, being derived from the ectoderm, would be imbued with the potentiality of developing in the same manner as the latter—that is to say, as squamous epithelium—and this although all trace of any of the extra-pituitary portion of Rathke's pouch was ultimately lost.

Such forms of tumour seem to be comparatively rare, and the writers would refer to the paper by Erdheim (*Sitzungsberichte der Kaiserl. Akad. der Wissenschaft, Math.-naturw. Klasse,* Bd. 113, H. 10, Dec. 1904, Abt. 3).

The absence of acromegaly in such a case as this and those described by Erdheim is not to be wondered at, seeing that the tumour did not involve or arise from the pituitary itself.

The microscopic sections in this case were made by Dr J. W. Dawson, and their photographic reproduction by Mr William Watson, of the Royal College of Physicians' Laboratory.

DESCRIPTION OF PLATES.

PLATE 11.

Fig. 1.—Base of brain.
- *a.* Large cyst in anterior part of the tumour, opened in its removal.
- *b.* The nodular under surface of the part of the tumour lying in front of the pituitary body.
- *c.* The pituitary body. Behind it, over the pons and upper part of the medulla, is a thickening of arachnoid which corresponded to the hindmost portion of the cyst.

Fig. 2.—Mesial surface of left hemisphere.

The tumour, as described in the text, has displaced the cerebral peduncle and pons into an almost vertical position.

PLATE 12.

Fig. 3.—Section of tumour.
- *a, a'.* Stroma in various stages of myxomatous degeneration.
- *b.* Capillaries in stroma.
- *c, c.* Epithelial ingrowths.
- *d.* Cell-nest.

PLATE 11.

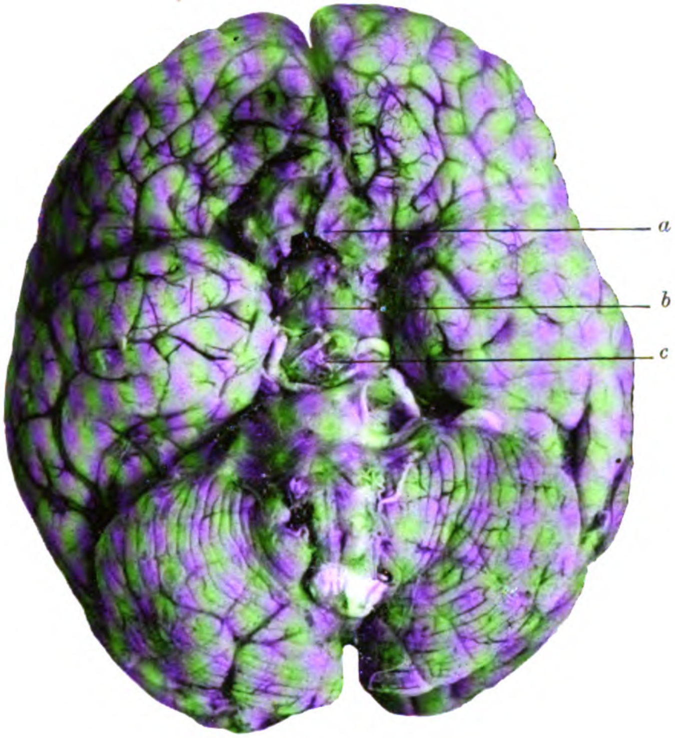

FIG. 1.

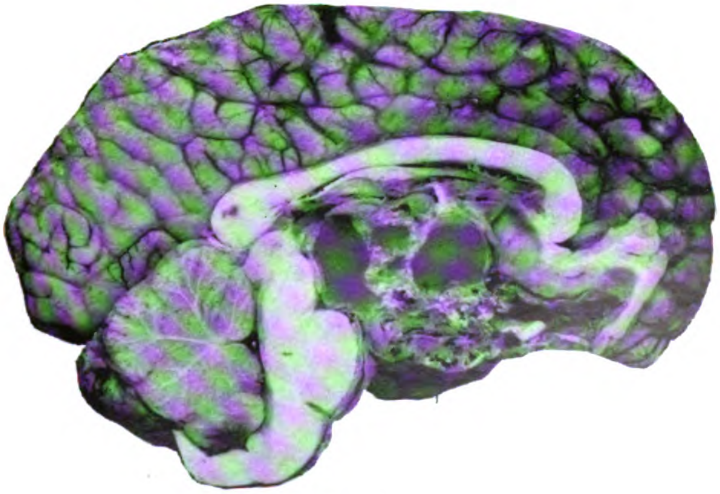

FIG. 2.

To illustrate Paper by Drs Mackay and Bruce.

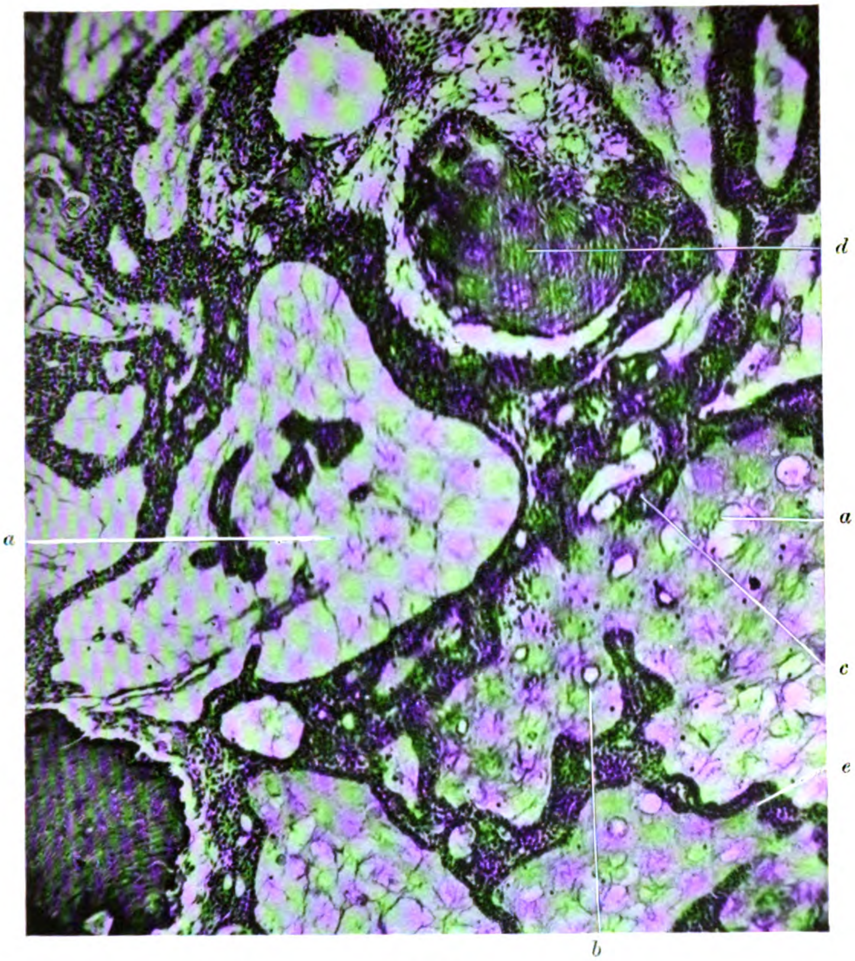

FIG. 3.

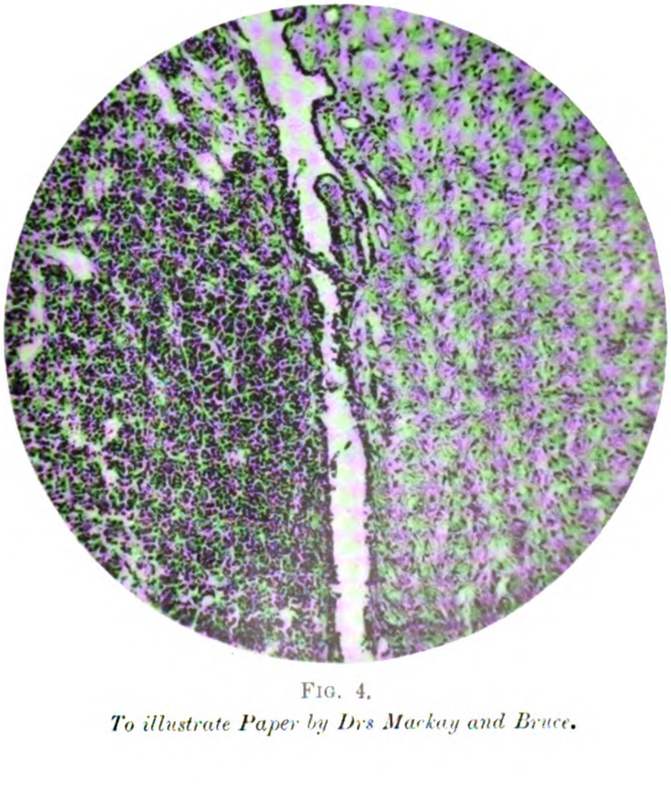

FIG. 4.

To illustrate Paper by Drs Mackay and Bruce.

PLATE 13.

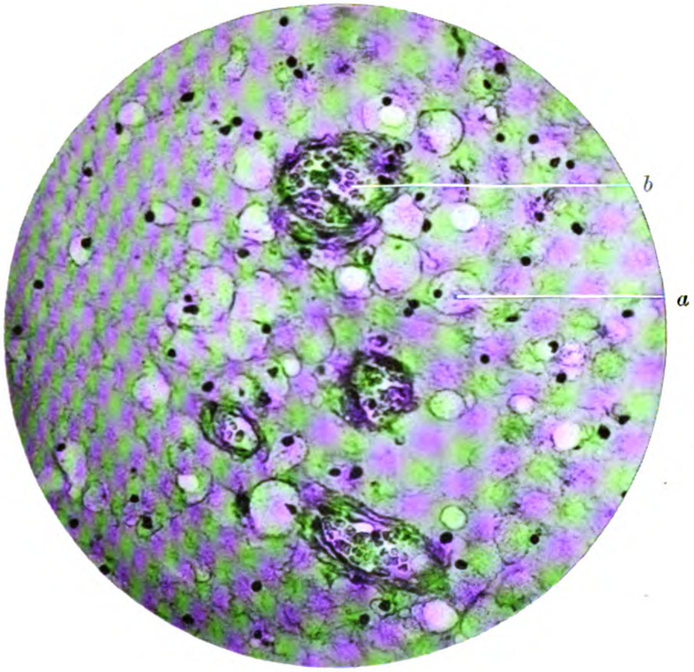

FIG. 5.

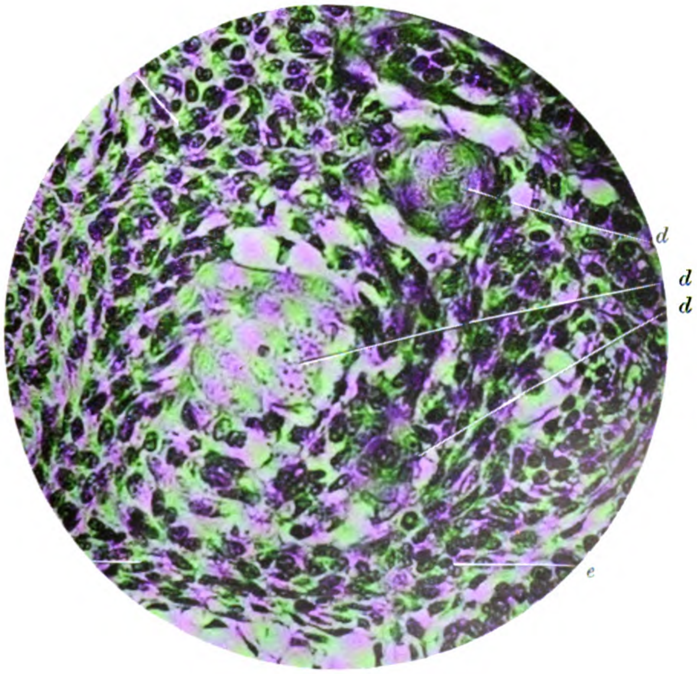

FIG. 6.

To illustrate Paper by Drs Mackay and Bruce.

Fig. 4.—Section of pituitary body (L.P.), showing—to the left side, the epithelial; to the right side, the nervous portion; in the middle, the epithelial cleft. All these appear normal.

PLATE 13.

Fig. 5.—Section of mucoid stroma, showing phagocytic cells (absorbing mucoid substance ?) near capillaries.

Fig 6.—*d*, *d*, *d*. Cell-nests.

e. Several layers of epithelial cells.

Abstracts

ANATOMY.

THE TUBERCULUM OLFACTORIUM. G. ELLIOT SMITH, *Anat.* (355) *Anz.*, Bd. 34, March 1909, p. 200.

AT the present time great attention is being devoted to the study of the problem of how the essentially olfactory cerebral cortex of the lowlier vertebrata became transformed into the *sensorium commune* of the mammalia, into an organ which receives and stores impressions coming from the organs of *all* the senses and from every part of the body, and permits these various impressions of one object to become blended, so as to awaken a consciousness of all its properties, whether they are appreciable to the organs of smell, touch, taste, vision, hearing, or the various other forms of sensation.

The recent researches of Edinger, Wallenberg, and Ariëns-Kappers have emphasized the importance of sense-impressions coming from the peri-oral region, which in most vertebrates is provided with highly-specialised sense-organs, and is often drawn out into a very sensitive organ of touch—the snout. It seemed, *à priori*, most probable that the obvious physiological association of this snout and the organs of smell would lead to a central connection of the mechanism of what Edinger calls the "oral sense" and the rhinencephalon. In other words, the first non-olfactory impressions to impinge upon the originally olfactory cerebral cortex *ought* to be those brought in by the trigeminal nerve from the snout, which is employed by most animals in conjunction with the smell-apparatus in searching for and testing their food.

The detailed study of the connections of the fifth nerve in reptiles and birds by means of histological and Wallerian methods, and the comparison of the sizes of various parts of the cerebrum in different sauropsida with large and small olfactory apparatus and variously-developed oral senses, convinced Edinger and Ariëns-Kappers that trigeminal impressions did actually impinge upon the cerebral cortex in reptiles and birds, far forward on the ventro-lateral aspect of the hemisphere, in a spot near the region of the homologue of which we call " locus perforatus anticus " in human anatomy.

Having reached this important conclusion, these investigators next turned their attention to the mammalian brain. There upon the base of the hemisphere, in the exact spot which their study of the reptilian and avian brain had indicated as the " centre of the oral sense," they found a prominent hemispherical patch of cortex—the tuberculum olfactorium—which up till then had been universally regarded as a part of the smell-apparatus, although no decisive proof had been produced of its anatomical connections with the olfactory bulb.

Ariëns-Kappers examined the evidence, and came to the conclusion that the tuberculum olfactorium was *not* the " oral centre " for which he was seeking, but Edinger was convinced that the " tuberculum " was not olfactory, but was the central receptive organ for trigeminal impressions coming from the snout.

The object of the present note is to demonstrate the fallacy of Edinger's contention. The untenability of the arguments upon which his hypothesis is based is shown, and positive evidence (histological, Wallerian and comparative) is produced to prove that the tuberculum olfactorium is really olfactory in function.

To illustrate and prove his contention, Edinger described the state of affairs in five lowly mammals. If he had deliberately selected five cases best calculated to *disprove* his hypothesis he could not have chosen better. Among these five is *Ornithorhynchus*, the mammal with the most highly-developed " oral sense " and relatively the largest trigeminal nerve in the whole class (Mammalia), yet it has an exceptionally small atrophic tuberculum olfactorium, simply because, being an aquatic animal, its smell-apparatus is poorly developed. AUTHOR'S ABSTRACT.

ON SEVERAL ANATOMICAL CHARACTERS OF THE HUMAN (356) BRAIN, SAID TO VARY ACCORDING TO RACE AND SEX, WITH ESPECIAL REFERENCE TO THE WEIGHT OF THE FRONTAL LOBE. FRANKLIN P. MALL, *Amer. Journ. Anat.*, Feb. 1909.

THE data and opinions of various writers regarding differences in the relative weight of the frontal lobe in men and women are quoted. The author of this paper, after examination of these, believes that the number of specimens has been too small and the methods employed too crude for the conclusion to be drawn that there is a marked difference, and that the personal equation of the investigator has played an important part in detecting differences.

Spitzka's assertion that the corpus callosum was larger in the brains of eminent than of ordinary men is shown to be incorrect, for, with the exception of the corpus callosum of Leidy, the callosa given by Spitzka are not above the average for brains of the same weight.

Bean's statements that the genu was relatively smaller and the splenium relatively larger in the negro than in the white, and that the negro frontal lobe was relatively smaller, were not confirmed by the author's investigations. (It has escaped the author's attention that the words "in the white man than" have been omitted from the first sentence of paragraph 2, page 8, whereby the whole sense is altered.) The personal equation in the case of the author is ruled out by the fact that at the moment of examining a brain he did not know its sex or source.

The methods of examining the corpus callosum employed by Bean and by the author are described, as well as the means adopted by the latter in testing the relative weight of the frontal lobe. The conclusions come to are that no difference can be ascribed to sex, and that it is incorrect to say that the frontal lobe of the negro is relatively lighter than that of the white.

It is shown that the statements regarding the lesser complexity of the arrangements of the convolutions of the negro brain are unreliable, and that the belief is unwarranted that the negro brain resembles the fœtal or simian type more so than the white does.

The configuration of the cerebral cortex of eminent men is discussed, and the lack of evidence that it differs from that of ordinary men's brains is pointed out. From this point of view male and female brains are also considered and compared ; and it is concluded that while there is some evidence of difference due to sex, yet nothing of scientific value can definitely be said.

The paper includes various tables and charts which bear out the author's conclusions. E. B. JAMIESON.

THE NERVES OF THE ATRIO-VENTRICULAR BUNDLE.

(357) J. GORDON WILSON, *Proc. Roy. Soc.*, Series B, Vol. lxxxi., No. B546, 1909.

THE animals used in this important investigation were the calf, sheep, and pig, and to a less extent the dog. The examination was confined to the part of the bundle extending from near the coronary sinus through the fibrous septum and down to the septal branches. The methylene blue "vital" method was the one mainly employed. The author found that no part of the *a-v* bundle, from the coronary sinus to the end of its right or left branch, is devoid either of groups of ganglion cells or of nerve fibres. He found (1) numerous ganglion cells—monopolar, bipolar, and multipolar—whose processes may pass (*a*) to adjacent ganglion cells in the bundle, (*b*) to muscle fibres in the bundle, and (*c*) through the muscle bundle so far as it was examined; (2) abundant nerve fibres running through the bundle in strands, the processes of which may end (*a*) in ganglion cells in the bundle, (*b*) in the muscle plexus, or may pass through the part examined; (3) an intricate plexus of varicose fibrils around and in close relation to the muscle fibres of the bundle; (4) an abundant vascular supply with well-marked vasomotor nerves and sensory endings.

In conclusion the author sums up the evidence that the bundle has, anatomically, nothing in common with the neuro-muscular spindle. W. T. Ritchie.

NEW STAINING-METHODS FOR THE STUDY OF NEUROGLIA (CELLS AND FIBRILS).

(358) **(Nouvelle méthode de coloration pour l'étude de la névroglie (cellules et fibrilles).)** J. Lhermitte et A. Guccione, *Semaine Méd.*, May 5, 1909.

After shortly reviewing various elective staining-methods for neuroglia and emphasizing the drawbacks attached to the use of these, the authors describe two new methods for the staining of neuroglia fibrils and cells respectively. They claim for these methods that they are absolutely constant and specific, that they are available for either normal or pathological tissues fixed within a reasonable time after death, and that the exact conditions necessary for success in staining are easily secured. Further, on account of the very exact differentiation of the tissue elements, the staining allows of the share taken both by the neuroglia and the connective tissue in inflammatory and other processes to be exactly defined, and also brings into evidence the relation of the neuroglia nucleus, protoplasm, and fibrils, to one another—thus solving the much-disputed question of the mode of formation of the fibrils.

The preliminary treatment in both methods is similar. Small pieces of brain or cord are placed first in 10 per cent. formol for two or three days, then washed before being cut by means of the freezing microtome. The sections are taken through distilled water into saturated aqueous solution of corrosive sublimate (this stage is not essential) for two hours. They are then kept for at least two days in a solution composed of 1 per cent. osmic acid, 3 parts; 1 per cent. chromic acid, 35 parts; 2 per cent. acetic acid, 7 parts; distilled water, 55 parts; and again washed in water and stained.

For the staining of the fibrils the section is taken on to a slide, 1 per cent. Victoria blue solution poured on, and the slide heated till steam rises, allowed to cool, and reheated ten times; after which the surplus stain is poured off and Gram's solution added for one minute. The section is then rapidly dehydrated in absolute alcohol, cleared in a mixture of equal parts of aniline oil and xylol, and mounted in xylol-balsam. The neuroglia nuclei and fibrils are stained intensely blue; the protoplasm of the neuroglia cells is, however, unstained; the ganglion cells are unstained; the connective tissue only slightly tinted green; and the myelin sheaths retain the yellow of the chromic acid.

The authors illustrate the use of this stain by referring to the structure of the normal cord and to various inflammatory and neoplastic proliferations of neuroglia. In the grey matter of the normal cord the ganglion cells are seen surrounded by a dense network of fibrils amongst which lie neuroglia nuclei, to which the fibrils have only a relation of contiguity. In a longitudinal section of the white matter the neuroglia fibrils are seen to be interlacing, but not anastomosing—the axis cylinders are unstained. In the sclerosed areas in disseminated sclerosis the neuroglia proliferation is clearly shown with more or less altered and unstained axis cylinders in the meshes. In the walls of old areas of cerebral softening the neuroglia proliferation formed a dense felt-work around the vessels or formed bundles which terminate in the middle of the softened area; the neuroglia fibrils are hypertrophied and completely independent of the nuclei which they surround. The authors regard the view of the connective tissue nature of the cicatrix in areas of cerebral softening as based upon insufficiently elective methods of staining.

In order to stain the protoplasm of the neuroglia cell, and thus bring out the relation of the nucleus, protoplasm, and fibrils to one another, phosphotungstic acid hæmatoxylin (Mallory) is substituted for the Victoria blue. The sections are transferred from the osmo-chromo-acetic mixture to Gram's solution, washed in distilled water, stained for two days, again washed in distilled water, rapidly differentiated in absolute alcohol and mounted in neutral canada balsam. By this means the neuroglia fibrils and nuclei are stained dark violet, the protoplasm rose violet, the connective tissue and axis cylinders a rose tint, and the myelin sheaths yellow. In longitudinal sections of sclerosed areas in the white matter of the cord in disseminated sclerosis it is possible to recognise the naked axis cylinders in spite of their intimate relation to the interlacing neuroglia fibrils. It is also possible to follow the bendings of the neuroglia fibrils within the cell protoplasm, and the authors have come to the conclusion that the fibrillary element is independent of the nucleus and of the protoplasm—of which it is probably an elaboration. JAMES W. DAWSON.

PHYSIOLOGY.

COMMENTS ON LIVON'S CONTRIBUTION TO THE PHYSIOLOGY (359) OF THE PITUITARY BODY. (Quelques mots à propos de la contribution à la physiologie de l'hypophyse de Ch. Livon.)

DE CYON, *Journ. de Physiol. et de Pathol. gén.*, mars 15, p. 259, 1909.

LIVON has stated that de Cyon always employs the buccal route in extirpating the pituitary body in rabbits, but in reality this method has not been adopted in rabbits, but expressly condemned by the latter author. A perfected modification of the method has been employed by him in dogs. Here, the pituitary is removed through an opening of 2 mm. diameter in the base of the cranium, and the septum which separates it from the brain is left intact, a condition which is indispensable for successful study of the functions of the body.

Livon renounces the operation by the buccal route because it yields positive results conforming to those of de Cyon.

Livon states that it is impossible for him to control certain negative results on blood pressure by extirpating the pituitary in dogs, because this body is always atrophied in the dogs from Berne employed by him. De Cyon uses dogs whose pituitary is normal, and attributes Livon's negative results to his use of dogs subject to abnormalities.

A dog in which the operation is performed with care is able to survive for twenty-six days. Livon finds that death follows two days after operation.

In raising the brain in order to reach the pituitary, Livon has probably ruptured communications between this body and nervous centres upon which its excitation is able to act.

Livon obtains effects similar to those ascribed by de Cyon to pituitary stimulation, by exciting the osseous fossa from which the body has been removed and its surroundings. These are referred to spread of the current to neighbouring parts of the brain, although it is stated that the brain was elevated by a retractor of insulating material. W. A. JOLLY.

ON PLASTIC TONUS AND PROPRIOCEPTIVE REFLEXES. (360)

C. S. SHERRINGTON, *Quart. Journ. of Exper. Physiol.*, Vol. ii., No. 2, p. 109, 1909.

THE reflex lengthening and shortening reactions in the extensor muscle of the knee, which are obtainable in spinal and decerebrate animals, are described. When the vasto-crureus muscle which is in a tonic condition is stretched either by mechanical manipulation or by causing the flexor muscles to contract, it assumes a new tonic length which is approximately that to which the muscle has been stretched. On the other hand, when the ends of the muscle are approximated either by passive shortening or by its own active contraction, it retains approximately the shortened length.

These two reactions of lengthening and shortening, which give to the muscle a tonic plasticity resembling the cataleptic state, are dependent upon the integrity of the reflex arc of the vasto-crureus muscle itself, that is to say, on its intrinsic proprioceptive reflex apparatus. When the afferent fibres arising in the muscle are cut, it presents neither lengthening nor shortening reaction. In this de-afferented condition the muscle is without tone and exhibits no tonic reflexes.

The lengthening reaction is regularly accompanied by a crossed reflex at the opposite knee. When the one knee is flexed the other extends. This reflex was described by Philippson in 1905.

The shortening reaction also is frequently but not regularly accompanied by a crossed reaction. When the one knee is extended by a passive movement raising the leg, the opposite knee, which is tonically extended, undergoes flexion owing to reflex relaxation of the extensor muscle.

These reactions are initiated by excitation of receptive organs belonging to the vasto-crureus muscle itself apart from any belonging to the joint. When the knee-joint afferents are eliminated by freeing the muscle from the femur, and removing the articular faces of patella and lower end of femur, the crossed reflex can still be elicited.

When the afferent nerves of the vasto-crureus have been severed, no crossed reaction can be obtained at the opposite knee by manipulation of the de-afferented muscle. If this muscle is thrown reflexly into contraction, its contraction ceases immediately on withdrawal of the stimulus, differing in this from the " normal " muscle whose contraction is maintained by the presence of the shortening reaction, the proprioceptive reflex caused by shortening, which fuses with the other and reinforces it. Since the shortening reaction is dependent on the integrity of the afferents from the muscle, it is absent in the de-afferented preparation.

In response to repeated reflex stimuli such a preparation yields a clonus instead of a tetanus.

When the de-afferented muscle is contracting reflexly by stimulation from an extrinsic arc, a forced stretch of the muscle does not cut short the contraction as it does in the case of the " normal " muscle. This is due to the absence of the proprioceptive reflex, whose function is to cut short another reflex and restore the preceding condition.

The reflex contractions are sooner fatigued when the afferents are cut than when these are intact. W. A. JOLLY.

ON THE DOUBLE NATURE OF THE PHOTO-ELECTRICAL (361) RESPONSE OF THE FROG'S RETINA.

Augustus D. Waller, *Quart. Journ. Exper. Physiol.*, Vol. ii., No. 2, 1909, p. 169.

The writer finds that recent work by Einthoven and Jolly on the photographic records of retinal currents in response to light—use being made of the former investigator's "string" galvanometer—goes far to confirm his own observations made some ten years ago with a much less delicate instrument. A series of tracings showing the electric phenomena exhibited at the "make" and "break" of illumination are given, and the following theoretical considerations are offered as an explanation of the phenomena in question :—

"All living matter is the seat of two opposed movements—integrative and disintegrative, constructive and disruptive, anabolic and katabolic. The two movements are simultaneous, one or other being predominant in different physiological states; they are not to be conceived as separate and alternate, *i.e.* as katabolic only during action, anabolic only during rest, but as katabolic and anabolic during rest and during action.

"The two movements in a given substance give rise to and are indicated by opposed electrical currents.

"During illumination the retinal pigment is destroyed and reformed, and the retina itself is the seat of a double electrical current—positive and negative." Arthur J. Brock.

ON THE TICKLING SENSATION. (Über den Kitzel.) (362)

Max Buch, *Arch. f. Anat. u. Physiol.*, Physiol. Abt., H. 1, 1909, S. 1.

Through light stroking on the skin by means of a feather, etc., or by the finger, we produce a certain quite specific cutaneous itching or tickling sensation of different intensity in different places. The sensation outlasts the stimulus, and when elicited from specially sensitive parts is accompanied by reflex shuddering. Certain forms of itching are identical with superficial tickling. The former word is used when the sensation is aroused by flies, etc. One can produce superficial skin tickling as well in oneself as in another person.

A similar tickling is elicited from the lips or mucous membrane of the hard palate and other parts. There are mucous membrane sensations which are quite distinct from this—for instance, the stimulation of the throat, which causes vomiting, or of the nasal mucous membrane, which gives rise to sneezing. Also the clitoris is termed in German "Kitzler."

The deep or muscular tickling cannot be produced by light touch or soft stroking, but requires a firm grasp. One cannot produce it in oneself. A psychical element is necessary for its production. It is accompanied by the laugh reaction with which the other forms have nothing to do. It is obtained most readily from such situations as the arm-pits, the soles of the feet or over the ribs.

The reflex from the abdominal muscles which may be obtained by drawing the blunt end of a pencil transversely across the abdomen is usually called a skin reflex. It does not, however, arise from the skin, but from the muscles. It belongs to the defensive reflexes and is dependent upon tickling. It cannot be produced in oneself, which would be the case were it an ordinary skin reflex. It is usually accompanied by the inclination to laugh.

The sole of the foot and palm of the hand differ from other parts of the body in that light stroking with a pencil is perceived merely as touch and not as tickling, and that a certain medium stimulus is necessary to produce the latter. When the finger is drawn lightly over the sole of the foot a very evident skin tickling is produced, which disappears when stronger pressure is used. To produce the deep tickling in oneself from this locality strong scratching is necessary. We have thus to do here with a muscular tickling.

Laughter may be caused by comical or laughable thoughts. This may be regarded as psychical tickling. In the case of children laughter is caused by the mere movement as if to tickle them without an actual touch.

There are numerous conditions in which one-half or part of the abdominal musculature does not give rise to tickling but to pain. The defensive muscular reflex appears quite in the same way, but unaccompanied by laughter. Some hyperalgesia of the lumbar sympathetic is present in such cases. It is probable that the sympathetic is involved in the muscular and tickling sensations.

According to Haškovec a pilomotor reflex can be produced in many individuals by light mechanical stimulation of the skin. This occurs principally in post-traumatic cases and in severe neurasthenia, where there are usually lesions of the sympathetic. Langley has shown that the pilomotors are innervated from the sympathetic.

The cerebrum plays a decisive part in the production of the tickling reflexes. In hemiplegia the abdominal reflex fails on the affected side. The optic thalamus has been considered by several observers to be the sub-cortical reflex centre for laughing.

In complete anæsthesia and analgesia the tickling sensation remains unaffected.

Skin tickling differs from other cutaneous sensations in that it depends less on the duration of stimulation. After the cessation of the latter the tickling continues, and may increase in intensity and spread to neighbouring parts. We have here a specific involvement of the cerebrum. Skin tickling has been developed in mammals as a protection against insects.

In deep or muscular tickling the psychical factor plays a larger part. It has been developed in connection with the play of animals. A sexual element has also entered into its evolution.

W. A. JOLLY.

THE RELATIONS OF TICKLING TO THE SEXUAL ELEMENT.

(363) (**Die Beziehungen des Kitzels zur Erotik.**) MAX BUCH, *Arch. f. Anat. u. Physiol.*, Physiol. Abt., Hft. 1, 1909, p. 27.

THE author has adduced evidence that the tickling which is accompanied by the reaction of laughing has its seat not in the skin but in the underlying muscles or fascia, and has nothing to do with the superficial or skin tickling. The sexual element has had to do with the origin of the former only in so far as the wooing of the sexes presents a simulated strife with attack and withdrawal.

Considerable confusion has arisen in the literature in regard to the relation between tickling and the sexual element owing to failure to distinguish between different forms of tickling.

The development of tickling sensations in the females over the ribs and in the armpits must be referred to a large extent to sexual causes and depends upon the neighbourhood of the breasts. These are not themselves a seat of this sensation, but when they are handled and pressed sexual feeling is aroused.

In the case of the female, tickling has been developed in association with the attack and defence of wooing more than in the case of the male, and therefore stands in much closer relation to the sexual element. With sexual satisfaction the sensation is weakened more than in the male.

The author does not agree with Robinson's conclusion that stimulation by tickling of parts far removed from the genital region can excite the sexual organs. Harvey's parrot, which laid an egg under the stimulus of stroking the back, may have been sexually excited by association of ideas, but this has nothing to do with tickling.

The pleasurable feeling aroused by scratching has been developed in connection with defence against parasites. W. A. JOLLY.

PSYCHOLOGY.

THE UNCONSCIOUS.

MORTON PRINCE, *Journ. of Abnorm. Psychol.*, (364) Oct.-Nov. 1908, Vol. iii., No. 4, p. 261; Dec. 1908-Jan. 1909, Vol. iii., No. 5, p. 335; Feb.-March 1909, Vol. iii., No. 6, p. 391; April-May 1909, Vol. iv., No. 1, p. 36.

THIS series of articles, covering some 110 pages, does not lend itself to a short abstract. The most important point in it is the dividing up of the old term " subconscious " into two, the " co-conscious " and the " unconscious," of which the first is held to be a mental phenomenon and the second a physical. A remarkably distorted account is given of Freud's views on the subject.

ERNEST JONES.

PATHOLOGY.

EXAMINATION OF RECENT AND OLD CEREBRAL SOFTENINGS BY BIELCHOWSKY'S AND CAJAL'S METHODS.

(365) **(Sur la neurotisation du ramollissement cérébral.)** PIERRE MERLE, *Rev. Neur.*, April 15, 1909, p. 392.

ROUND the periphery of old softenings a rich network of non-myelinated fibrils is usually found. These fibrils do not extend far in any direction, and cannot be said to be capable of making up for loss of cerebral substance, much less of restoring function. Where altered myelinated fibres are still present, this fibrillary mesh is more abundant; there would appear to be a relation between the disintegration of the myelin sheaths and the development of this fibrillary network. It is often thick, sinuous and varicose, and the fibrils have often club-like endings. The process ought to be considered one of cicatrisation. S. A. K. WILSON.

THE MENINGES IN SCARLET FEVER.

(Les méninges dans la (366) **scarlatine.)** R. BENARD, *Rev. de Méd.*, 1909, p. 365.

BENARD discusses the three ways in which the meninges may be affected in scarlet fever.

1. Meningeal infection. The cerebro-spinal fluid shows an abundance of micro-organisms but an absence of leucocytosis. The latter may be due either to a low microbial virulence or to inability of the debilitated organism to react. The prognosis varies accordingly.

2. Meningeal reaction, of which three degrees are described. The first is shown by hypertension of the fluid, which is quite clear and free from leucocytes and micro-organisms. In the second degree cellular elements, usually lymphocytes, are constant, and micro-organisms are sometimes present. The third degree consists in a meningeal congestion, which may be the only anatomical substratum of meningeal symptoms occurring during life. The prognosis is usually favourable.

3. Meningitis properly co-called, which may be either sero-fibrinous or purulent. The clinical signs of meningeal involvement are more definite than in cases of meningeal reaction. Purulent meningitis in scarlet fever very rarely occurs as a primary condition,

but is usually secondary to suppurative otitis, frontal sinusitis, rhinitis or arthritis. Streptococci are the organisms most frequently found. Staphylococci, pneumococci and tubercle bacilli have also been noted. The issue is almost always fatal.

J. D. ROLLESTON.

CONTRIBUTION TO OUR KNOWLEDGE OF THE CHANGES (367) WHICH OCCUR IN THE INNER EAR AFTER HEAD INJURIES. (Beitrag zur Kenntnis der nach Kopfverletzungen auftretenden Veränderungen in inneren Ohr.)

STENGER (Königsberg i. Pr.), *Archiv f. Ohrenheilk.*, Bd. 79, H. 1 and 2.

IF disturbance of hearing accompanies or follows concussion of the brain, due to head injury, it is important that we should know whether the case is one of concussion of the labyrinth without gross anatomical lesions or, if these lesions exist, where they are and what their nature may be. In his experiments Stenger used white rats, and produced labyrinthine concussion by blows on the head: after the blow the rats seemed stunned and lifeless, but soon recovered: the animals were killed at various periods up to six weeks after experiment, by cautious blood-letting: if gross lesions of the temporal bone were present, the observations were excluded. Microscopical examination of the inner ear showed in slight cases hæmorrhage confined to the region of the round window and lower whorl of the cochlea: after more severe injury the whole of the cochlea showed blood extravasation, most marked in the scale tympani, but also hæmorrhages in the cochlear nerve and in the ampullæ: in still more severe cases the hæmorrhages were more extensive.

The author then gives an account of the cases in which microscopical examination of the inner ear has been carried out in cases of fracture of the base: such fractures may be longitudinal or transverse.

Stenger divides labyrinthine injuries into three groups: (1) those with injury of the bony labyrinth capsule; (2) those without injury of the capsule; (3) those without any recognisable bony injury. In group (1) the injury is very severe and the auditory function is abolished: if the patient lives, the fracture (usually transverse) is repaired by bony union as a rule, and the vestibule is filled up by bony new formation. In group (2) the fracture is longitudinal as a rule, and the ossicles are torn or dislocated and hæmorrhage occurs in the region of the round window. Barnick thinks that this is due to sudden rise in the intra-labyrinthine pressure—the fenestræ being the only yielding parts of the labyrinthine wall. Many cases of longitudinal fracture are fatal, not on account of the injury done at the time, but on account of infection due to the fracture of the cribriform plate or of the roof of the tympanic cavity or external meatus. If the patient recovers, the hearing may improve as the hæmorrhage is absorbed. There are various theories as to the pathology of group (3)—thus Schwartze, Müller and Friedmann regard the condition as one of vasomotor paresis: Politzer and Gradenigo are in favour of hæmorrhage: Oppenheim and Habermann think that the central auditory tracts are affected and that any changes in the inner ear are secondary; Spira compares the deafness in group (3) to the loss of vision that occurs after head injuries without any immediate ophthalmoscopic changes, though optic atrophy follows later. Stenger believes that his experiments have proved that the correct view is that advanced by Politzer and Gradenigo, *e.g.* hæmorrhage. As before mentioned, the special seat of hæmorrhage is the region of the round window.

J. S. FRASER.

LESIONS OF THE AXIS-CYLINDERS OF THE OPTIC NERVE (368) IN A CASE OF TABETIC OPTIC ATROPHY. (Lésions cylindraxiles du nerf optique dans un cas d'atrophie d'origine tabétique.) ANDRÉ THOMAS, *Rev. Neur.*, April 15, 1909, p. 389.

THE examination was made by Cajal's silver method. Apart from the ordinary histological appearances of an atrophied nerve, the alterations noted chiefly where the optic nerve is about to enter the sclerotic are of interest. Here were found large irregular protoplasmic masses, some apparently independent, but most in continuity with an axis-cylinder on the side of the sclerotic. These masses were simply axis-cyclinder swellings, and in following them towards the sclerotic it was found that in many instances the axis-cylinder had bifurcated, one branch going to these swellings, the other, finer, ending in a little ball or sphere. These findings are comparable to the changes which have been observed (by the same method) in the posterior roots in tabes and in herpes zoster, and in Thomas' opinion are indicative of regeneration of nerve elements.

S. A. K. WILSON.

ALTERATION IN THE SPINAL GANGLION CELLS FOLLOW-(369) ING NEUROTOMY. S. W. RANSON, *Journ. of Comp. Neur. and Psychol.*, Vol. xix., April 1909, p. 125.

THE more important results of this experimental research on the second cervical dorsal root ganglia of white rats after section of the nerve close to the ganglion are summarized as follows:—

1. It is probable that the medium-sized coarsely granular cells

which fail to react to the lesion belong to neurones which send no axon into the nerve (Dogiel's type II. or new types III., IV., VIII., and IX.).

2. While only part of the cells (52 per cent.) undergo complete degeneration, nearly all (at least 85 per cent.) show chromatolysis after complete section of the nerve, in spite of the fact that not more than 33 per cent. of the spinal ganglion cells are associated with medullated fibres that would be injured in cutting the nerve.

3. There is no indication that the reaction in the small cells is secondary to some intra-ganglionic disturbance; it possesses all the characteristics of a true axonal reaction, and occurs at least as early as, possibly earlier than, the reaction in the large cells.

4. The process of degeneration varies in different cells. In some cases invasion of the cells by proliferating fibroblasts is the most striking feature, in others vacuolation. In the small cells the excentric nuclei may be finally extruded as the turgescence increases.

5. There is no part of the ganglion in which the reaction is more marked than in the rest. This is an argument against Bumm's assumption that the dorso-proximal part is the locus of the cells which do not possess a fibre in the peripheral nerve.

6. The large cells can be followed through every stage of repair and recovery.

7. It is the small neurones which are most injured and from among this group of elements that the loss of cells chiefly occurs.

Since they show typical axonal reaction we are forced to conclude that they possess axons in the peripheral nerves, and that their non-medullated processes, traced by Dogiel as far as the junction of ventral and dorsal root, extend beyond that point into the nerve. J. H. HARVEY PIRIE.

EXPERIMENTAL PELLAGRA IN FOWLS, WITH SPECIAL (370) REFERENCE TO THEIR FOOD AND THE SEASONS OF THE YEAR.

(Sulla pellagra sperimentale nei polli con particolare riguerdo alla natura delle sostanza alimentare e alle stagione dell' anno.) CARLO CENI, *Riv. Speriment. di Freniat.*, giugno 1908, p. 16.

THIS article records the results of experiments undertaken to confirm results previously obtained by Lombroso and the writer.

These experiments commenced on 1st January 1905, and continued till December 1906; in fact, the birds experimented on were kept under observation during the spring and summer of the succeeding year.

Two poultry runs were prepared, and in each were placed four hens and a cock. One lot were fed exclusively on healthy maize which was sterilized, and then month by month infected with the Penicillium glaucum. The other lot were fed entirely on bran and bread made of wheat which, before being sterilized, was infected like the maize, month by month from the same growth of Penicillium glaucum.

During the course of the experiment several birds died, and the birds in both groups underwent similar changes, viz., in March and more especially in April and May of each year the birds became cachectic and lost weight markedly, their feathers dropped, patches of erythema appeared on these denuded areas, and, lastly, they had frequent attacks of diarrhœa. June saw no change in the birds, but during July, August, and September there was a marked improvement in their appearance, but no increase in weight. This improvement was maintained in October, except in the case of one hen, which again sickened. By the end of December they had all resumed their normal healthy appearance and usual weight; some had even increased in weight.

The birds remained in a healthy state till the end of February, when they again commenced to sicken, and another cycle similar to the above was started.

In January 1907 all the birds were put on to a healthy diet. During spring and summer of that year there was no recurrence of the symptoms that had appeared during 1905 and 1906.

From the experiment Ceni draws the following conclusions :—

1. A diet infected with Penicillium glaucum will produce in fowls the symptoms characteristic of experimental pellagra whether the diet be exclusively maize or wheat.
2. The symptoms vary in intensity with the season of the year.
3. The symptoms completely disappeared when the birds are given a non-infected diet.

Before concluding, Ceni adds, " Paladino-Blandini, an assistant of Gosio, in a recent article saw fit to deny that there was any relationship between the season of the year and the toxicity of the Penicillium. He now ought to see that we have to deal with facts, the upsetting of which requires more than a criticism based on imaginary objections." R. G. Gordon.

THE POISONS OF PELLAGRA AND THE SEASONS OF THE (371) YEAR. (Le stagione dell' anno e i veleni delle muffe.)

Paladino-Blandini, *Riv. Speriment. di Freniat.*, giugno 1908, p. 69.

This article is written in answer to a paper of Ceni's in vol. xxxiii. Fasc. ii. and iii. The controversy between Ceni and Paladino-

Blandini by this time has become vigorous, and the latter in this article makes some very sarcastic remarks about Ceni; he especially disparages his technique and doubts the value of his scientific observations.

On this question of pellagra and seasonal variation Paladino-Blandini takes up his position thus: he grants that Ceni's theory is a simple and rational one, but denies that it is supported by the facts. He bases his contention on an examination of the figures relating to pellagra and a seasonal variation as given in Ceni's published articles. He tabulates these figures, analyses the results, and these would appear to show that there is very little to choose between the figures for the four seasons. If anything, in the three months of spring the incidence is least seen.

His explanation of this supposed seasonal variation in toxic action is that the results obtained are falsified by errors due to faulty methods of technique.

The remainder of this paper is taken up with some very personal remarks about Ceni. R. G. Gordon.

THE POISONS OF PELLAGRA AND THE SEASONS OF THE (372) YEAR. (I veleni delle muffe pellagrogene e le stagione dell' anno.) Ceni, *Riv. Speriment. di Freniat.*, giugno, 1908, p. 84.

Apparently as soon as his eyes lighted on the previous article Ceni sat down and wrote this very vigorous reply, throughout which in large type are scattered the words "incomplete, illogical, and untruthful." These three words give the keynote to the spirit of the whole article. Paladino-Blandini takes the figures from Ceni's articles and comes to certain conclusions antagonistic to Ceni's theories. Ceni explains this by saying that his opponent has chosen figures only from a limited number of his published experiments, and that even those figures which he has chosen are wrongly quoted. He draws up two columns of figures to compare those used by Paladino-Blandini upon which to base his theories and those from which he himself has drawn his conclusions. They differ practically all through; one example will suffice:—in March, Ceni quotes thirty experiments, his opponent no more than five.

A footnote by the Editor expresses the hope that for the dignity of science, the Review itself, and the two writers, the discussion for the future will be carried on with an absence of bitter and personal remarks and with a new series of experiments to go upon.

R. G. Gordon.

CLINICAL NEUROLOGY.

INFLAMMATORY FACIAL PARALYSIS: FACIAL-ACCESSORY (373) ANASTOMOSIS. C. H. FAGGE, *Proc. Roy. Soc. of Med.*, April 1909, p. 148.

A MAN, aged 45 years, suffered from complete left facial paralysis, following an attack of middle-ear suppuration. After nine months' electrical treatment without improvement, the facial was exposed and divided at its exit from the stylo-mastoid foramen, and, being found too short to suture to the hypoglossal, was anastomosed end-to-end with the trapezial portion of the spinal accessory cut across in front of the sterno-mastoid. A good result followed, and the patient gradually acquired power of dissociated action of the muscles of the face and shoulder. Voluntary movement of the left side of the face, however, is greatest when the left arm is raised, and when the arm is lifted up from the side the orbicularis palpebrarum contracts. The supraspinous portion of the trapezius has partially atrophied. but movement of the shoulder does not appear to be affected.

HENRY J. DUNBAR.

A CASE OF CENTRAL NEURITIS, WITH AUTOPSY. COTTON (374) and SOUTHARD, *Amer. Journ. Insan.*, April 1909, Vol. lxv., p. 633.

IN this paper is given a complete account of a typical case of the condition described by Adolf Meyer under this name some twelve years ago. The characteristic autopsy findings may be found associated with many clinical conditions, most of which belong to the depressive psychoses. The symptoms, however, are, to use the author's expression, " rather vague," and it is certainly not made clear why the authors maintain that " the condition can be recognised from its symptoms and established anatomically."

The patient in question was a woman of forty, who for three years had suffered from gradually increasing depression, persecutory ideas, agitation, and apprehensiveness. After a prolonged attack of severe diarrhœa she was seized with general twitchings, weakness and delirium; she had pulmonary tuberculosis. Eleven days later she died. The chief post-mortem finds were general softness of the whole nervous system, and, microscopically, a diffuse affection of the parenchymatous elements of the nervous system, consisting in Marchi degeneration of the medullated fibres and axonal degenerative reactions in the nerve cells. The cell changes were less pronounced than the fibre changes, but are probably primary to these.

ERNEST JONES.

THE SYMPTOM-COMPLEX OF CENTRAL NEURITIS. ISADOR (375) CORIAT, *Journ. Nerv. and Ment. Dis.*, May 1909, p. 277.

THIS syndrome, first described by Adolf Meyer, occurs as a terminal condition in various cachexias, and particularly in the depressive psychoses. The clinical symptoms are severe diarrhœa, wasting, fever, twitchings of the limbs and increased deep reflexes. At the autopsy is found axonal degeneration of the motor cells of the cortex, and of the cells of the cranial nuclei, anterior horns and Clarke's column of the spinal cord, together with Marchi degeneration of the medullated fibres. Coriat here gives a review of the literature, and then briefly mentions twenty-three cases of the condition. He has previously described it as a variety of alcoholic neuritis, both with and without changes in the peripheral nerves. He accounts for the changes not by starvation or toxæmia, but along the lines of Edinger's *Ersatz-Theorie.* ERNEST JONES.

THE RELATION BETWEEN ANEURYSM OF THE AORTA AND (376) TABES DORSALIS, WITH THE REPORT OF A CASE. PAUL H. BIKLÉ, *Med. Rec.*, May 8, 1909.

AFTER pointing out that aneurysm of the aorta and locomotor ataxia are, in varying degrees of frequency according to different authors, both caused by syphilis, Biklé goes on to discuss the question suggested by Lesser as to whether there may be in tabes dorsalis an etiological factor in the production of aneurysms of the aorta. He comes to the conclusion that the co-existence of the two conditions is only a coincidence, and entirely independent of the virulency of the toxin, the resistance of the patient, or any other factor.

A case of tabes dorsalis is reported where a large false aneurysm was found in the abdomen at the autopsy.

W. KELMAN MACDONALD.

ATYPICAL CASES OF POLIOMYELITIS. (Atypische Poliomyelitisfälle.) (377) RUDOLF NEURATH, *Wien. med. Wochenschrift.*, May 1, 1909, S. 974.

THIS is a brief clinical report of two atypical cases of poliomyelitis. The first case showed signs of a lesion in the pyramidal tract as well as in the grey matter of the cord—a child of two years suddenly seized with a flaccid paralysis of the left arm, the knee jerks were found to be a little exaggerated, especially on the left side, and on this side also, Babinski's and Oppenheim's phenomena were present as well as a slight ankle clonus. The second case showed the following features:—at eight months an acute feverish illness lasting three days, resulting in a paralysis of both lower limbs; three months later, first noticed a paresis of the arms which gradually got worse; at twelve months became unable to hold up the head properly; when examined at fourteen months, slight paralysis of the lower facial muscles, complete immobility of abdominal and intercostal muscles, E.R.D. in the paralysed muscles; deep reflexes absent; sensory and sphincter functions intact. It is of interest to note that a dorsiflexion of the great toe was present—due apparently to the sparing of the ext. long. hallucis. This type, with acute onset and chronically progressive course, ascending by stages, appears to be unique. J. H. HARVEY PIRIE.

MALIGNANT TUMOUR IN THE SPINAL MENINGES, WITH (378) INVASION OF THE CORD; SECONDARY TO CARCINOMA OF THE MAMMARY GLAND, WITH OTHER METASTASES.

H. MACNAUGHTON-JONES, *Proc. Roy. Soc. of Med.*, April 1909.

SEVEN years before death the left breast was removed for a large cystic tumour which microscopically showed a degeneration into malignancy. When the patient came under the treatment of the author five years later the tumour had reappeared in the glands on both sides of the neck, in the left lung and pleura, in the skin over the left side of the chest, while there were signs pointing to pressure on the left brachial plexus. After some improvement had taken place under Röntgen rays and subcutaneous injections of trypsin the right breast was removed.

Ten months before death there was sudden loss of power and general numbness in the lower limbs, loss of sphincter control, loss of sensation up to the sixth dorsal vertebra. Some months later the patient had what was described as an epileptic fit. The organs of special sense discharged their functions normally. Death was sudden.

Examination of the spinal cord showed a large malignant mass inside the dural sheath opposite the third dorsal segment compressing the spinal cord severely. There was also a tendency to invasion of the cord itself along the larger vessels entering from the pia mater, and to a less extent along the posterior roots.

Illustrative sections are given, excerpts are taken from the work of Spiller and Weisenberg, and the author, in discussing the cause of the convulsive attack, refers to the case of "advanced carcinoma uteri" with symptoms of bulbar paralysis reported in the *Review of Neurology and Psychiatry*, 1905, by Warrington, and he attributes the rapidity of the patient's final attack to cancerous toxæmia.

W. KELMAN MACDONALD.

THE SIGN OF ARGYLL-ROBERTSON IN NON-SYPHILITIC (379) LESIONS OF THE CEREBRAL PEDUNCLE.

Guillain, Rochon-Duvigneaud, and Troisier, *Rev. Neur.*, April 30, 1909, p. 419.

The writers describe two cases of non-syphilitic lesions of the crus —one a revolver ball destruction in a case of attempted suicide, and the other a vascular softening—where the characteristic signs of the Argyll-Robertson pupil were present.

S. A. K. Wilson.

SEPTICÆMIC CEREBRO-SPINAL MENINGITIS. (La Méningite (380) cérébro-spinale septicemique.)

Cohen, *Ann. de L'Instit. Pasteur*, April 1909, No. 4, p. 273.

In this paper (39 pages, with photo-micrographs of the organism described) the author describes a type of meningitis to which he applies the title as above.

His observations are based on a personal study of three cases of acute meningitis, from each of which a new organism with distinctive characters was isolated. Clinical notes on the three cases are given, with the results of the post-mortem examination in one of them. All the cases were examined bacteriologically, and numerous experimental observations on the results of infection of guinea-pigs and rabbits, with the organism isolated, are recorded.

The author, from a study of the literature on the subject, believes that the bacillus he now describes has frequently been confused in the past with Pfeiffer's influenza bacillus, as in the cerebro-spinal fluid it strongly resembles that organism. He further dwells on the present state of doubt and confusion which exists as to the bacteriology of influenza, and the exact relation of Pfeiffer's bacillus to the disease. He applies the term septicæmic to this new type of meningitis, as in one or other of the three cases personally observed, in addition to the undoubted evidence of the infection of the cerebro-spinal meningitis, there was evidence of a more generalised invasion of the tissues. For example, in Case 2 the organism was demonstrated in the cerebro-spinal fluid, in the circulating blood, and in pus from the left nostril (antral suppuration). In Case 3 it was found in the lumbar puncture fluid, in the blood, in serous fluid obtained by deep puncture of the lung, and in the pus from a suppurative arthritis of the wrist. In all three cases there was evidence of a broncho-pneumonic process.

His conclusions are that there exists a special form of acute meningitis, due to this organism, which is a small Gram negative, non-motile bacillus which can be cultivated on blood agar media; that while it has morphological resemblances to Pfeiffer's bacillus, involution forms, including long twisted filaments, appear rapidly on solid media, and that it can be with certainty differentiated from the influenza bacillus by agglutination and complement fixation tests; further, that the organism is pathogenic for guinea-pigs and rabbits, producing similar lesions to those seen in man, and that it is possible to immunise these animals against a fatal infection by the injection of increasing doses of the organism. In the course of a copious bibliography the author inadvertently no doubt makes no reference to recent observations in Edinburgh on a similar if not identical micro-organism found in cases of meningitis, and referred to in this *Review*, vol. v. p. 692, 1907, and vol. vi. p. 631, 1908; also in *Journal of Pathology and Bacteriology*, vol. xii., No. iv., p. 446; vol. xiii., No. i., p. 119. STUART McDONALD.

TUMOUR OF THE FRONTAL SUBCORTEX AND CALLOSUM, (381) WITH FLACCID PARALYSIS OF THE MUSCLES WHICH SUPPORT THE HEAD, APHONIA, MENTAL CHANGE, AND OTHER SYMPTOMS, ILLUSTRATED BY A CASE, WITH NECROPSY. C. K. MILLS, *Journ. Nerv. and Ment. Dis.*, May 1909, p. 261.

THE character of this contribution is sufficiently indicated in the title. Other symptoms present were paraplegia, followed by a right hemiplegia—paralysis of the sphincters, right-sided hypoæsthesia, and clumsiness of movement on the right side.

ERNEST JONES.

TUMOUR OF FRONTAL LOBE AND CORPUS CALLOSUM. (382) HOWARD H. TOOTH, *St Bartholomew's Hosp. Reports*, Vol. xliv., p. 23.

A WOMAN, aged 33, complained of severe occipital and vertical headache. She gave inconsequent orders about cooking to her servant, ordering wrong ingredients and wrong times for the cooking, and became strange in her manner. She had sudden attacks of unconsciousness, lasting for a day or two, followed by drowsiness for as long as a week. There was some incontinence of urine for several days. The mental condition varied a good deal; generally she became slow and dull, at times irritable, but at other times she was quite "sharp." Her legs gradually became weak; she was unable to stand alone or dress herself, and barely able to sit in a chair without falling to one side. Her mother noticed that she was "more particular in the choice of words," and "used larger words" than she was accustomed to do, and that she talked more slowly than was her habit.

When she came under observation (July 1908) the patient was found to have a somewhat fatuous expression, and to be very easily provoked to laughter; in fact, she appeared to regard the examination as rather a joke (*Witzelsucht*). Optic neuritis was more marked on the right side than on the left. There was no defect of smell. There was no facial asymmetry at rest, but there was marked immobility of the muscles of expression generally, and it was difficult to get her to make facial movements to command. On voluntary movement the right angle of the mouth moved before the left. There was distinct weakness of the left hand, and distinct though slight spasticity of the left arm. No tremor was noted. The patient could perform simple reflexive movements well with either hand. Some movements, probably very automatic—cutting with scissors, for instance—were well carried out by either hand. Certain other movements she failed in; thus " turn the handle of a barrel organ," " draw a cork," " make movement of sewing with a needle," " turn key in lock," were all done well with the right hand, but quite failed in performance by the left. This apraxia was not, however, constant. When the patient stood up, she always fell backwards and to the left. On putting her feet together she always began to fall slowly and steadily backwards. The abdominal reflexes were diminished, equally so. The plantar response was generally flexor, sometimes indefinite on the left side.

At the autopsy—death taking place some days after the first stage of an operation on the right frontal lobe—there was discovered a tumour occupying the mesial half of the right frontal lobe, and spreading backwards to invade the corpus callosum—microscopically it proved to be a gliosarcoma. The genu of the corpus callosum was completely destroyed. The anterior half of the corpus callosum and the underlying fornix were completely involved. The tumour had obliterated the anterior horn of the lateral ventricle, and was applied closely to the right caudate nucleus without invasion of it.

From several points of view the case is instructive. The marked cerebellar features present in this frontal case ought once more to be noted. The *Witzelsucht* is characteristic. The motor apraxia is of great interest; the case is to be included in the increasing group of corpus callosum lesions revealed clinically by unilateral or bilateral motor apraxia. S. A. K. Wilson.

TUMOUR OF THE TEMPORO-SPHENOIDAL LOBE AND (383) "DREAMY STATES." Colin K. Russel, *Montreal Med. Journ.*, Vol. xxxviii., Feb. 1909, p. 75.

This case illustrates the localising value of the so-called " dreamy states " in lesions of the temporo-sphenoidal lobes. " The attacks started with a feeling of dread; she trembled as if from cold and felt as if she were dying." She did not lose consciousness, but during the attack she saw as if in a dream a woman apparently trying to save a child from drowning. She could never see the woman's face, but in all the attacks could recognise her as the same woman. The attacks were all similar in nature and averaged in frequency about one a week. There was no aura of smell or taste. There were no convulsive movements, no biting of the tongue, nor involuntary micturition. Usually she slept after the attack for a short time. Only occasional headache, but when present it was confined to the left side of head and face, and only once or twice was it accompanied by vomiting. The patient has always been right-handed.

Examination showed no dysarthria or aphasia; there was post-neuritic optic atrophy with complete blindness, and the gradual development of loss of sensibility over the region of the left fifth nerve, with loss of corneal reflex and loss of taste on the anterior two-thirds of the tongue on the left side. Partial nerve deafness on the left side and diminution of abdominal and epigastric reflexes on the right side.

The tumour proved to be in the right temporo-sphenoidal region, more or less circumscribed, involving the second and third temporal convolutions in their anterior two-thirds and the unciate and hypocampal gyri. The anterior one-third of the first temporal convolution is also partially involved.

Inferiorly it was found to have invaded the dura and bone involving the Gasserian ganglion and spreading into the antrum of Highmore. AUTHOR'S ABSTRACT.

PONTINE SYNDROME WITH HYPER-EXCITABILITY OF THE (384) FACIAL NERVE AND DISTURBANCES OF TASTE. (Syndrome protubérantiel avec hyperexcitabilité du nerf facial et troubles du gout.) RAYMOND and FRANÇAIS, *Rev. Neur.*, April 30, 1909, p. 445.

WITH paralysis of the right sixth and seventh nerves, there existed a hemiplegic weakness of the left side of the body. In addition, the whole of the left side of the body, including the face, was the seat of diminished sensibility to temperature, with hyper-sensibility to tactile and painful cutaneous stimuli. Deep sensibility was normal. On the right side of the tongue taste was completely lost over its anterior two-thirds: all other forms of sensibility of the tongue on the right side were preserved.

The authors consider there is strong evidence in their case that the fibres conveying gustatory impressions from the anterior two-thirds of the tongue enter the pons by the intermediary nerve of Wrisberg, and have been involved by the lesion which is obviously in the right half of the pons. S. A. K. WILSON.

LABYRINTHITIS AND BRAIN ABSCESS. **(Labyrinthitis** und (385) **Hirnabszess.)** HEGENER (Heidelberg), *Beit. z. Anat., etc., des Ohres, etc.*, Bd. 2, H. 6.

THIS paper contains an account of seven cases of labyrinth inflammation accompanied by abscess of the brain : in five cases the abscess was in the cerebellum and in two in the temporo-sphenoidal lobe. In the first the sequence of events was as follows :—necrosis of labyrinth, perilabyrinthine suppuration, retention of pus, perforation of dura mater and cerebellar abscess. The second case was similar, the infection of the labyrinth having been originally brought about by way of the external semicircular canal.

In Case 3 the sequence of events seems to have been reversed, and the spongy bone surrounding the dense labyrinth capsule was the part first affected from the middle-ear suppuration ; necrosis of the labyrinth resulted and was followed by cerebellar abscess. The fourth case was also one of cerebellar abscess, but the path of infection was not thoroughly cleared up : it was thought, however, that the inner ear had been affected by labyrinthine suppuration a long time before the development of the cerebellar abscess (latent labyrinth suppuration). Case 5 was one of old complete destruction of the semicircular canal apparatus : microscopic examination showed that the most chronic changes were to be found in the canals, while those in the vestibule were more recent and those in the internal auditory meatus quite fresh : great dilatation of the ductus cochlearis was present. Hegener notes that in three out of his five cases of cerebellar abscess nystagmus was present to the diseased side, and he considers this sign (Neumann's) to be of importance in diagnosis.

In the other two cases the labyrinthine suppuration was complicated by cerebral abscess, but, in the first case at any rate, the abscess was due to direct infection through the roof of the middle-ear cleft, which was the seat of cholesteatoma formation. In the first case there was on one side a complete recent necrosis of the membranous labyrinth due to thrombosis of the internal auditory artery. In the second the external semicircular canal was injured at operation.

Hegener, like many others, is of opinion that operations on the middle ear and labyrinth ought to be carried out so as to avoid concussion as far as possible, since intracranial complications are often due to operation. Macroscopic examinations to determine the path of infection are useless, and should be given up in favour of microscopic methods. Finally, the author thinks that testing for labyrinthine fistula symptoms by raising the air pressure in the meatus is not free from danger. The paper is illustrated by excellent plates.

J. S. FRASER.

DEATH FOLLOWING LUMBAR PUNCTURE. (La mort suite de (386) ponction lombaire.) J. Minet and F. Lavoix, *L'écho méd. du Nord*, 1909, No. 17, p. 193.

The writers have collected thirty-four cases from literature (cerebral tumours, 15 cases; cerebellar tumours, 8; uræmia, 3; cerebral hæmorrhage, 5; acute myelitis, 1; tuberculous meningitis, 1; relapsing fever, 1). In twenty-four death occurred within twenty-four hours of the operation, and in almost all the puncture was followed immediately by alarming symptoms. In nine, as the autopsy showed, the evacuation of the fluid had produced intense congestion of the cerebral vessels followed by rupture and fatal hæmorrhage, but in the remaining twenty-five the cause of death was obscure. In none of the cases, however, was a microscopical examination of the nervous system made. The writers are inclined to adopt Martin's explanation of a bulbar shock which is produced by intense vaso-motor phenomena, causing severe histological lesions of the bulbar centres. Sicard's prophylactic treatment is recommended. The patient should be kept in bed twenty-four hours before and forty-eight hours after the operation, which should be performed in the lateral decubitus. Not more than 4-8 c.c. should be removed, and aspiration should not be employed. A fine needle should be used. The operation should be avoided in any suspected case of cerebral tumour in which the symptoms can be relieved by palliative treatment. J. D. Rolleston.

MOTOR ATAXY FROM EMOTION. S. Weir Mitchell, *Journ. (387) Nerv. and Ment. Dis.*, May 1909, p. 257.

Under this title Mitchell describes the symptom in which ataxic movements occur whenever the patient tries to perform certain acts in the presence of other persons. The commonest of such acts is the signing of one's own name. In the case described sudden attacks of inexplicable dread also occurred. Mitchell considers that the symptom is one of manifestations of "nervousness." He adds: "Nervousness in its various forms is one of the many symptoms in the lesser neuroses, but sometimes in people apparently otherwise healthy is at times so predominant as to constitute by itself a condition which may be called general nervousness."

It need hardly be said that the symptom really is a well-known manifestation of Freud's *Angsthysterie*. Ernest Jones.

PENMANSHIP STUTTERING. Scripture (New York), *Journ. (388) Amer. Med. Assoc.*, May 8, 1909.

The condition reported is one which the author states has never been observed or described before. A man of thirty-eight wrote shorthand exclusively from fourteen to eighteen, and shorthand and typewriting from eighteen to twenty-two. He was ill for three years, then returned to shorthand again for one year, but was soon assigned a position as bank-teller, where the most of his work was done in long hand. When told that he wrote badly and must improve, he took lessons and arduously imitated others; at first he wrote fairly well slowly, but at the bank he was seized with nervous fear and dread, the writing grew worse with each word and at the end of words, so that before long he was unable to do his work at all. There was no trouble with his speech.

The author decided that the condition was due to "cramps of the muscles of action resulting from a compulsive nervous fear that was aroused whenever the action was contemplated." His treatment consisted in training the patient to use an entirely new set of thoughts and movements for writing, and, to accomplish this, the author devised an alphabet composed of hieroglyphics. The principles of the treatment differ little from those employed by Fraenkel in locomotor ataxia. C. H. HOLMES.

HYSTERICAL BLINDNESS. DILLER (Pittsburg), *Journ. Amer. Med.* (389) *Assoc.*, April 24, 1909.

THREE cases are reported, one of which exhibited asteriognosis. Hysterical blindness may affect one or both eyes, and may be of sudden or gradual onset; the duration may be from several hours to several years; blindness without inflammatory changes, with normal fundi and pupillary reaction, points strongly to hysteria, while the sudden onset and termination hardly admit of any other diagnosis. Among the accompanying symptoms, ptosis, nystagmus, strabismus, and conjugate deviation are the most constant.

C. H. HOLMES.

THE BLINDNESS OF HYSTERIA. GRADLE (Chicago), *Journ. Amer.* (390) *Med. Assoc.*, April 24, 1909.

IT has been known for some time that the disturbances in sight of hysterical patients compare to the anæsthesia in other sensory regions. Reduction of vision and contraction of the visual field is more common than complete blindness. The author's main object is to show that the question of psychic diminution of vision is a live and not an academic one, that its real importance is more apparent in the oculist's office than in the neurological clinic. He gives the history of seven patients, whose visual disorders are distributed under the following headings:—

(1) Double-sided complete blindness; (2) one-sided hysterical

blindness; (3) partial impairment of sight in otherwise non-hysterical subjects; (4) hysterical exaggeration of congenital amblyopia; (5) malingering and hysteria in children.

In such conditions immediate cures can be expected in only the cases of recent onset; a persistence of symptoms for weeks makes it most unlikely that they will yield to any treatment.

C. H. HOLMES.

THE PSYCHOLOGICAL BASES OF INEBRIETY: THEIR ETIOLOGICAL AND SOCIAL FACTORS: REMEDIES.

(391) TOM A. WILLIAMS (Washington), *N.Y. Med. Journ.*, April 1909.

THE author classifies inebriates into (1) suggestible individuals who drifted into it and were not truly inebriates until the occurrence of tissue degeneration from prolonged drinking; until this happened, they were easily curable; (2) individuals whose suggestibility has arisen by the perpetuation of the impulsiveness of the child from lack of ethical training; the removal of the tendencies which have been directed towards alcohol involves their re-education; (3) the psychoathenically constituted, in whom the feeling of longing has turned towards the satisfaction by a narcotic. By difference of environment it might have turned towards mysticism, fetichism. Whatever happens is a habit-reflex, which should have been prevented in youth, where the tendency is conduced to by excess of sympathy. The oscillations of feeling to which these people are subject have to be borne, and for this purpose hobbies are useful.

The remedy is the teaching of mothers to form healthy emotional habits in their children; and to do this they must understand that the determinants of conduct, the feelings, are in the child very little influenced intellectually. The habit of obedience is only less pernicious than that of "laisser faire," for to act without understanding is a sure forerunner of unreasoning conduct. Mothers must graduate the ethical exercises of their children in conformity with their mental development, as is now done with athletics and intellectual studies. Shame must be eliminated in all relations with the child, and morality and religion spoken of in the same way as the most everyday things: it is only thus that the child can utilise them in conduct. The present method produces either indifference or over-conscientiousness. It is in play that morality is best cultivated, for it is useless unless kinetic; and the most perfect dynamy requires intense interest; and this is given by play as against work. It is the student of morbid psychology who must answer the various questions aroused by the inebriates of modern life.

AUTHOR'S ABSTRACT.

OCULAR PALSIES IN SCARLET FEVER. (Des paralysies (392) oculaires au cours de la scarlatine.)

F. Terrien, *Bull. de la Soc. de Péd.*, 1909, p. 99.

Ocular palsies are a rare event in scarlet fever. Only three cases of ophthalmoplegia interna have hitherto been recorded (Förster, Schmidt-Rimpler, and Remak), and only one of ophthalmoplegia externa by Lenhartz. Terrien's case was that of a boy aged 13 years who developed paralysis of the left internal rectus on the third day of an ordinary attack of scarlet fever. Diplopia was still present when the boy was seen two years after. The fundi were not affected. J. D. Rolleston.

OPTIC NEURITIS ASSOCIATED WITH DISEASE OF THE (393) SINUSES ACCESSORY TO THE NOSE.

Risley, *Journ. Nerv. and Ment. Dis.*, May 1909, p. 270.

The writer considers that the importance of the accessory nasal sinuses in relation to the causation of obscure ocular symptoms has not been sufficiently recognised. Symptoms arising from disease of these sinuses may even closely simulate intra-cranial disease. He gives a careful account of two cases in which optic neuritis thus arose. Ernest Jones.

A CASE OF PARALYSIS OF THE INFERIOR OBLIQUE MUSCLE (394) OF THE LEFT EYE.

Cohen, *Arch. of Ophthalmol.*, May 1909, p. 282.

The patient was a girl of 7½ years, whose history presented nothing bearing on the condition except that walking began late, at two years of age. Vision, after correction for slight hypermetropic astigmatism, was normal in each eye. The head was inclined to the left. The primary deviation of the left eye was slightly downwards and inwards, secondary deviation upwards and outwards. The eye could not be elevated when adducted and only partially when abducted. Diplopia was absent, and the fundi and pupillary reactions were normal. The author considers that the left superior rectus was probably also weakened and that the condition was due to a congenital developmental muscular defect.

H. M. Traquair.

OBSERVATIONS ON EXPERIMENTALLY-INDUCED CHOKED (395) DISC.

Cushing and Bordley, Jun., *Johns Hopkins Hosp. Bull.*, April 1909.

The term "choked disc" is used to embrace all grades of the retinal lesion from the earliest congestion to the final destruction of the optic fibres. The authors admit that before their experiments were undertaken they were prejudiced in favour of a mechanical as opposed to an inflammatory explanation of choked disc, on the basis of their experience with over four hundred cases, many of the observations in which were difficult to explain on any other than a mechanical basis. The results of their experiments are summarized in the following conclusions:—

1. That the occurrence of the neuro-retinal œdema is primarily dependent on the passage of cerebro-spinal fluid under tension from the subarachnoid spaces of the interpeduncular region into the vaginal sheath of the optic nerve, and that cerebral decompression often allows the process to subside owing to a resultant diminution of tension from release of the confined fluid.

2. That the experimental work corroborates many of the more recent clinical observations in showing that a choked disc, even of considerable height, may be rapid in its formation, and, provided it has not gone on to the stage of new tissue formation, may rapidly subside, and thus speaks strongly in favour of a mechanical as opposed to a chemical, or inflammatory, origin for the lesion.

D. K. HENDERSON.

NYSTAGMUS OF THE RIGHT VOCAL CORD AND OF THE (396) SOFT PALATE IN A CASE OF CEREBRAL DISEASE.

(Nystagmus der rechten Stimmbandes und des weichen Gaumens bei einem Falle von zerebraler Erkrankung.)

W. G. PORTER, *Zeit. f. Laryng., etc.*, Bd. 1, Ht. 6, S. 745.

THE patient, a man æt. 65, complained of difficulty of swallowing and speaking: on examination the right vocal cord and right side of the soft palate showed continuous involuntary twitching movements resembling the movements of ocular nystagmus, at the rate of 150 a minute. The condition remained unaltered during a period of several months' duration. An examination of the nervous system by Dr Edwin Bramwell showed evidence of bilateral cerebral disease, probably associated with arterio-sclerosis of the cerebral vessels.

Such cases of involuntary movements are very rare, and have always been bilateral, with the exception of one other case (Scheinmann). The whole of the group of muscles involved in the act of deglutition may be involved, or only certain of them may be affected by the movements. The symptom may probably be looked on as definite evidence of organic disease of the central nervous system, but is not of value for localisation.

AUTHOR'S ABSTRACT.

DISAPPEARANCE OF THE ARGYLL-ROBERTSON SIGN.
(397) FERREIRA, *Journ. des Prat.*, Avril 1909, p. 264.

A COLLEAGUE of the author's developed unequal pupils, followed in a few days by general malaise, supraorbital neuralgia, and lumbar pains. Slight albuminuria was present, but no casts. He had previously suffered from symptoms pointing—although not conclusively—to a syphilitic infection, and had treated himself accordingly. The pupils were markedly unequal, the left being dilated, with nearly complete absence of reaction to light. The right pupil reacted well and the consensual reaction was distinct.

The other reflexes of the body generally were found to be normal.

An ophthalmologist was consulted, who diagnosed the presence of the Argyll-Robertson pupil. After a month of energetic mercurial treatment the pupillary reactions were normal.

No definite statements are made as to the presence or absence of the pupillary reaction in accommodation and convergence, or the presence of the consensual reaction equally on both sides, or the state of the vision. H. M. TRAQUAIR.

PSYCHIATRY.

THE INSANE DIATHESIS.
BROWN (Chicago), *Journ. Amer. Med.*
(398) *Assoc.*, May 8, 1909.

THE family physician is often able to counteract or correct the temperamental qualities in the child, youth or adolescent which, if unrecognised, may lead to insanity in later life. These phenomena may be accounted for by certain defects in the neurons or cell units of which the nervous system is composed—external stimuli not being properly received or elaborated by the neurons of the cortex. With such a conception for a foundation the author believes it is easy to understand how certain individuals fail to respond to educational influences.

Physical imperfections, such as deformities of the external ear, cranial and facial asymmetries, anomalies of the jaws, teeth and sexual organs, may often be accompaniments of the insane temperament, but it should likewise be remembered that often individuals of the insane temperament show no physical imperfections and, conversely, those who have gross physical imperfections may not become insane. The effect of heredity is often distinct and conspicuous. In a majority of instances the inheritance is mainly maternal, and similar peculiarities are transmitted from the mother to the child.

The symptoms may be divided into those occurring (1) in childhood, *i.e.* to puberty; (2) in youth, to eighteen; (3) in adolescence, to twenty-six. Of the symptoms occurring in these periods, the first shows liability to convulsions, enuresis, night terrors, chorea, habit spasms, and sexual precocity, violent outbreaks of temper, persistent insubordination, extreme jealousy, selfishness, cruelty, lack of constructive talent, seclusiveness, morbid impulses, such as the various sort of "Jacks" (rippers, huggers, kissers, clippers and elopers). The second and third groups show would-be-revolutionists, inventors, reformers, agitators, egoists, and not infrequently criminals. Any of these may readily drift into paranoia, in which the delusional state usually represents an exaggeration of previous personal peculiarities.

The indications to be met are: first, to promote the health of the neurons; second, to provide proper moral and disciplinal education for the individual. In childhood a well-regulated boarding-school offers the best solution of the problem. In youth the same sort of influences must be provided, the aim being to develop judgment, self-possession and independence, with the hope that special talents or inclinations may make manifest the course which the training should take. The marriage of two individuals having such temperaments invariably leads to domestic discord and disaster, and should be prevented. C. H. Holmes.

THEORY OF THE COMPLEX. Wm. A. White (Washington), (399) *Interstate Med. Journ. St Louis*, April 1909.

This clear and valuable article, written by a psychiatrist in a general medical journal, should do much to clarify the subject of psychopathology and prevent misconceptions about scientific psychotherapy, besides enabling physicians to explain to the laity exactly what is being really accomplished by Christian Science and other healing cults.

The author applies the term only to pathological complexes; and to explain its meaning, discusses mind as an adaptive mechanism, quoting from art to illustrate. He discusses by the genesis of fears the relation of body to mind, adopting a monistic interpretation.

He then illustrates by cases the defence mechanism of forgetfulness of painful emotions, which constitutes the dormancy of a complex, which he compares to the incapsulation of an abscess, the pain aroused by touching the vicinity of which corresponds to the painful emotion aroused when the complex is touched by any associated idea. The pain warns the patient against irritating the complex. Forgetting is one of the modes of defence.

Another mode is compensation by the distraction of absorbing interests which drown the complex. The aspirations of religion constitute a defence reaction of this type, as Nietzche has pointed out regarding Christianity. Another common means is the wish-fulfilling dream or delirium, the world of fancy to compensate for a dull lot. Again, persistent moods are often defence reactions against an unpleasant complex. The funny man is often at bottom a sad fellow, the acerbity and scandalmongery of the old maid translate the repression of her sexuality.

Any side chain may arouse the complex : thus the bark of a dog would bring on emotional seizures in a lady in whom the only associations remaining after an esteemed friend's death had been a dog which two years afterwards died also. Later, the words, love, happiness, etc., brought on the painful emotion. Agitation of the voluntary muscles, too, may replace the emotion of a defence reaction.

The author then discusses a dynamogenic theory of the complex, and alludes to sensory and symbolic manifestations, citing cases of his own and one from Jung, believing that though they appear far-fetched they may be explained by the law of transference, such as the affection of the childless woman for cats.

The unravelling of complicated trains of thought by the methods of Jung and Freud in dementia præcox shows that even diseased mental reactions are not fortuitous, and psychiatrists should no longer be satisfied with such terms as " strange," " incoherent," in describing mental states, and, moreover, mental reactions should only be judged along with their context. It would be manifestly unfair to call a man emotionally unbalanced because of flying into a passion and using forceful language to an employee who merely lays a paper before him on his desk without considering the fact that the clerk has been instructed over and over again to avoid doing that very thing.

The grouping of impressions into ideas and of these into systems is comparable to the grouping of stones into houses and these into a city. An earthquake changes the form and blocks the avenues of approach ; but familiarity with the town permits a recognition of the elements of the ruin. Sanity or insanity are not deficiencies of kind ; the irrationality of the alienated finds its counterpart not only among the obsessed, but in the conventionalities to which we all conform. Their origins are buried in history ; they are automatic and cannot be changed by rational appeal, *e.g.* no reason determines the by-polar variety of modesty which constitutes the shame reaction of the modern society woman in the ballroom or on the seashore respectively. This is no more rational than is the wearing of a veil over the mouth by the male Tuaregs. To change such custom is only possible by removing the whole constellation of ideas and emotions to which they respectively belong. To do this in the case of individual perversions demands the time and skill of the student of mental pathology who has ascertained the genesis of the morbid trends which dis-adapt his patients to their environment.

TOM A. WILLIAMS.

MENSTRUATION IN ITS RELATION TO INSANITY. Sheila
(400) M. Ross, *Journ. Ment. Sc.*, April 1909.

This paper dealt with the menstrual history for ten years from 1897-1907 of all newly-admitted and transferred patients in whom the catamenia were present in the Holloway Sanatorium Hospital for the Insane. The patients were drawn from the upper and middle classes, and their ages varied from seventeen to fifty-five years. The menstrual history of 395 patients was examined, two types of mental disease, idiocy or imbecility and insanity with epilepsy being unrepresented. The duration of the menstrual period was not noted in the register kept.

After a short discussion of the relationship of the function of menstruation to insanity, in which it was stated that by the older writers such as Esquirol and Morel derangements of menstruation were estimated to form one-sixth of the physical causes of insanity, it was pointed out that such derangements of menstruation were usually present in a far higher percentage amongst insane patients : in the series studied in one-third of the cases. Abnormal menstruation was then stated to be one of the striking physical symptoms of a general toxæmia, lymphogenous in many cases, proceeding from the alimentary tract. The evidence of this toxæmia was given by leucocytosis, by various agglutinins in the blood, and by the frequent presence of indol in the urine.

When the previous history of patients suffering from mental disease was studied, it was found that in those forms of mental disease where physical ill-health was most clearly shown, melancholia, confusional insanity, acute delirious mania, general paralysis of the insane, there was a previous history of abnormal menstruation or complete amenorrhœa in half of the cases. In mania three-fourths of the cases admitted had a history of previous regularity of menstruation, and this was also the rule in cases of delusional and moral insanity, dementia and "weak-mindedness." All the patients admitted below the age of twenty had had amenorrhœa for some months previous to the mental attack.

When mental disease had definitely shown itself, it was observed that menstruation varied much according to the type of the disease manifested. Two-thirds of the cases of recent mania menstruated regularly, chronic and recurrent cases almost invariably so. Amenorrhœa was present in half of the cases of recent melancholia. One-half of the chronic cases of melancholia menstruated regularly, and there was amenorrhœa in one-fourth of the recurrent cases. In confusional insanity, amenorrhœa or marked irregularity of menstrual function was observed. Two-thirds of the cases of delusional insanity menstruated regularly ; amenorrhœa was extremely rare. In the six cases of moral insanity menstruation was normal. Cases of primary dementia and "weak-mindedness" menstruated regularly as a rule, and cases of stupor almost invariably so. Two out of the three cases of general paralysis of the insane in this series menstruated regularly at the onset of this disease, one continuing to do so till her death, two years after the disease was diagnosed, one becoming amenorrhœic in a year. The third had been previously amenorrhœic for years.

Increase of mental symptoms during the menstrual period was noted in five-eighths of the cases of mania, and in all the cases of stupor: it was rare in delusional insanity and less marked in melancholia, the menstrual period in that period being so often suppressed or highly irregular.

Masturbation was noted (for three years) in 9·6 per cent. of the patients, the average age of each patient when admitted being thirty-one. Ten of the cases previously addicted to this vice were discharged "not improved." Amenorrhœa was present in eight out of thirty-one cases, and five menstruated irregularly. The practice seemed to be equally common in mania and melancholia.

In the series of 395 patients there were 11 puerperal cases, while one patient was admitted in the fourth month of pregnancy, and delivered of a healthy child at full term. All except two of these puerperal cases were amenorrhœic—all were discharged recovered—two only being still amenorrhœic. The case of insanity during pregnancy remained acutely maniacal—the catamenia returned two months after the birth of her child. The menopause occurred in nine patients and had no apparent effect on their mental state. The average age at which it occurred was 48·8 years. Menstruation returned in two cases over fifty after an absence of many years.

Of the cases discharged as "recovered" in this period, out of 174, 150 menstruated regularly—22 were irregular and 2 (near the menopause) were irregular. Of 84 cases discharged "relieved," 46 menstruated regularly—7 were amenorrhœic; and of 65 cases discharged "not improved," 10 menstruated irregularly and 16 were amenorrhœic.

AUTHOR'S ABSTRACT.

ON ASSOCIATION RESEARCHES, ESPECIALLY IN FEEBLE-MINDED CHILDREN.

(401) **(Über Assoziationsuntersuchungen, besonders schwachsinniger Kinder.)** WIMMER, *Monatsschr. f. Psychiatr. u. Neur.*, Febr. u. März 1909, Bd. 25, Sn. 169 u. 268.

THE attention of those working at this subject should be called to this excellent article, which, however, does not lend itself to a short abstract. Wimmer's personal results confirm in most respects the classic work of Jung and Wehrlin on the subject.

ERNEST JONES.

THE MISINTERPRETATION OF PSYCHOGENIC SYNDROMES (402) SEEN SHORTLY AFTER ARREST, AND THE CONFOUNDING OF THEM WITH CATATONIA. (Ueber die Verkennung psychogener Symptomenkomplexe der frischen Haft und ihre Verwechslung mit Katatonie.)

RISCH, *Monatsschr. f. Psychiatr. u. Neur.*, April 1909, Bd. 25, S. 281.

IN an admirably clear article Risch discusses the group of psychogenic (but not hysterical) states which so often ensue after arrest, and which are generally designated as simulation by the laity and as catatonia by the physician. He relates at great length four very interesting cases. Motor excitement, destructiveness, inhibition and refusal to speak (manifestations which are often wrongly interpreted as negativism and mutism), striking variation in the results of tests of intelligence and orientation, expansive ideas which stand in relation to recent events, and, above all, close dependence of all the symptoms on external events are the chief characteristics of the condition. The article should be read in the original by all those who have to do with the medico-legal judging of such cases.

ERNEST JONES.

A REVIEW OF OUR PRESENT KNOWLEDGE CONCERNING (403) THE SERO-DIAGNOSIS OF GENERAL PARALYSIS.

ERNEST JONES, *Amer. Journ. Insan.*, April 1909, Vol. lxv., p. 653.

THIS is a critical review of the work that has been done on this subject in the past couple of years; some 220 articles are referred to. Seven methods are dealt with. Of these, two, the Landsteiner-Mucha agglutination phenomenon and the Neisser-Wolff-Eisner cutaneous reaction, have not yet been sufficiently investigated to appraise the possible value of them. Three other methods, those of Klausner, Michaelis and Fornet-Schereschewky respectively, have been carefully investigated by other workers, notably by Plaut, and cannot at present be considered as having any practical value, though they point to what may be fruitful lines of research for the future. The Porges-Meier reaction is of great theoretic interest on account of the light it indirectly throws on the nature of the Wassermann phenomenon. Clinically, it appears to be of some value, though it cannot be regarded as a specific reaction or as rivalling in accuracy of results the Wassermann one.

The great practical value and precise diagnostic indications of the last-named reaction are insisted on and fully discussed. A detailed account is given of the studies that have thrown a light on the nature of it. It is considered that Wassermann's original contention that the reaction constitutes a test for specific syphilitic protective anti-bodies has been definitely disproved. The reaction may be evoked not only by the use of syphilitic liver extract as antigen, but by a large number of substances, most, or perhaps all, of which are of a lipoid nature; these lipoids are probably present in especially large quantities in syphilitic organs. They act on the blood-serum, or cerebro-spinal fluid, as the case may be, of syphilitics by interacting, probably as a precipitation phenomenon, with some substance that is contained in euglobulin; the combination has the power of combining with complement, and thus of inhibiting hæmolysis. The substance in the serum is a normal constituent thereof, and has of itself some anti-hæmolytic power, which is increased in the interaction just mentioned. Whether the increase of this substance that takes place in syphilis originates in the luetic agent itself, or is evoked as an anti-body in response to the syphilitic infection or in response to the tissue disintegration caused by this infection, are questions as yet unanswered. Affinity for lipoids, notably for lecithin, appears to be one of its characteristic attributes, and it is possible that this may be important, not only in the Wassermann reaction, but in relation to the morbid processes in the body induced by the syphilitic infection.

A full bibliography is appended. AUTHOR'S ABSTRACT.

ON THE USE OF CERTAIN NEW CHEMICAL TESTS IN THE (404) DIAGNOSIS OF GENERAL PARALYSIS AND TABES.

ERNEST JONES and G. W. ROSS, *Brit. Med. Journ.*, May 8, 1909, p. 1111.

THIS is a preliminary note on the results of two new tests for euglobulin in the cerebro-spinal fluid of parasyphilitics. The tests are Noguchi's butyric acid test, and an ammonium sulphate ring test here described for the first time. The subject is more fully discussed in an article shortly to appear in the *Rev. of Neur. and Psychiatr.* AUTHORS' ABSTRACT.

CONJUGAL GENERAL PARALYSIS. COLIN M'DOWALL, *Journ.* (405) *Ment. Sc.*, April 1909.

GENERAL paralysis occurring in man and wife is not as uncommon as the rarity of records of this circumstance would seem to indicate. The writer gives three clinical epitomes with post-mortem notes of examples of this condition.

The most prominent feature in the six individual instances of the disease is syphilis. There did not appear to be any definite period after infection at which the signs of mental disturbance became evident. Those first infected do not of necessity show the signs of nervous degeneration first. Mott has demonstrated the important rôle stress plays in the production of this disease, and it is certainly in evidence in the present series. Syphilis first and "stress" later appear to be the essentials of an attack of general paralysis. Stress acts not only upon the mental state but also upon the physical condition. Worry produces anorexia, and the consequent lack of nourishment leads to a diminution of the resistance of the individual, the outcome of which may be, in a syphilitic subject, an attack of general paralysis.

The writer apologises for walking upon such a well-beaten path as the "no syphilis—no general paralysis" theory, but excuses himself because it is not yet universally accepted, even though Kraft-Ebing has very clearly shown the immunity of the general paralytic from syphilis. The absence of cicatrices or other signs of specific lesions found post-mortem in general paralytics is remarked upon, but a suggestive if not pathognomonic piece of evidence is a roughened endocardium covering the base of the aorta.

AUTHOR'S ABSTRACT.

(406) THE QUESTION OF AUTO-INTOXICATION IN ACUTE DEPRESSIVE PSYCHOSES.

MYERS, FISHER and DIEFENDORF, *Amer. Journ. Insan.*, April 1909, Vol. lxv., p. 607.

AFTER a good review of the literature of the subject the authors give an account of their own investigations on the urine and fæces of nine cases of manic-depressive insanity. Eight of these were of the depressive form, and one of the mixed. Various evidences of intestinal decomposition were found from examination of the urine; the fæces were normal. The authors consider that auto-infection may be an influencing factor in the disease, "although at the present time the analytical data are insufficient to ascribe definitely certain nervous or other disorders to an auto-intoxication."

ERNEST JONES.

TREATMENT.

(407) REQUISITE FOR THE TREATMENT OF THE PSYCHO-NEUROSES: PSYCHOPATHOLOGICAL IGNORANCE AND THE MISUSE OF PSYCHOTHERAPY BY THE NOVICE.

Read at the Symposium on Psychotherapy, Washington Therapeutic Assoc., April 10, 1909. TOM A. WILLIAMS.

A CLOSE analysis shows that the real cause of most so-called "nervous prostration" is failure of adjustment to environment, and is psychogenetic. A rest cure in itself is inefficacious, but gives the doctor the opportunity to re-educate the perverted trends of the patient's disposition. Before reaching the neurologist a patient has been "suggestioned" *ad nauseam*: and such empirical therapy has failed, as has the injudicious appeal to his will-power, already exhausted by the complexities, social and professional, which have contributed to his failure of adjustment.

1. To arrest a morbid train of thought and set a mind at rest is an art requiring knowledge and skill. Its attempt by untrained men has been even more disastrous than the work of the tyro in gynæcology, for it is the direct cause of the rise of Christian Science, Emmanuelism, and such cults. Happily a body of experts in psycho-pathology is now counteracting their injurious influence, for an affectation of knowledge will not supply the public's demand for real psychic treatment. But we require greater facilities for instructing medical men in the principles of psycho-pathology and therapeutics; and proper wards and out-patient clinics under competent teachers should be provided, in every large city at least.

2. The most important principle in psychotherapy is that of "conditioning" the reflexes, as revealed by Pawlow's experiments in modifying even the secretions by stimuli chosen quite arbitrarily.

In extending this principle to the associating of pleasant feeling-tones with useful activities, we can exert powerful control over such morbid tendencies as lying, bad temper, sexual perversion or insufficiency, as well as over the false fixed ideas at the root of the gastropathy usually called nervous dyspepsia, and in the hystero-neurasthenic syndrome often called traumatic neurosis, instead of, as at present, often being the actual source of the false ideas which create these syndromes. The mechanism of these has been fully discussed by the author in the *Journal of Abnormal Psychology* of February, and in a communication to the Congress on Industrial Accidents, at Rome, in May, respectively. Both are forms of hysteria in that they conform to the definition of Babinski—"Susceptible of production by suggestion and of removal by suggestion-persuasion."

Cases of gastric neurosis require time for cure, as there is often much emaciation and the idea is firmly fixed; but the author has found that in traumatic cases a cure may result from the effects of a single interview. The importance of a thorough knowledge of the technique for the detection of organic diseases of the nervous system cannot be too much emphasized, for an organic basis is often at the root of both hysteria and neurasthenia. Want of success in the treatment of these neuroses is due to the muddled conceptions which prevail concerning their pathogenesis. A thorough comprehension of the psycho-genesis of these clear-cut states will enable the physician to apply his knowledge to the commoner and more difficult conditions of despondency, suspiciousness, facile emotionalism, religious sentimentalism, social ashamedness, weakness of character, and morbid fears, pains, besetments or other forms of inadequacy to personal and social requirements, and he will do so without the danger unavoidable to the ecclesiastic or other layman of forgetting the very frequent somatic complications the removal of which is often the key to successful psychotherapy.

AUTHOR'S ABSTRACT.

A CONTRIBUTION TO THE TREATMENT OF HYSTERICAL (408) APHONIA. (Beitrag zur Behandlung der hysterischen Aphonie.) SEIFERT, *Zeit. f. Laryng., etc.*, Bd. 1, Ht. 6, S. 759.

IT is well known that in slight cases of hysterical aphonia the introduction of the laryngeal mirror may be sufficient to bring back the voice; in rather more advanced cases the introduction of a probe into the larynx may be necessary or else endo-laryngeal faradisation. Suggestion is of the greatest importance, also breathing exercises. In a very obstinate case the author by chance placed the patient with her head hanging down backwards below the level of the body; she was then able to phonate and finally was cured. Since then he has frequently tried this method, and always with success.

W. G. PORTER.

THE USE OF THE X-RAYS IN THE TREATMENT OF EXOPHTHALMIC (409) GOITRE. J. C. PRICE, *Therap. Gaz.*, Dec. 1908.

THE writer treated three cases of exophthalmic goitre with complete success, by applications of the X-rays, which, he claims, cause glandular atrophy, lessened secretion, and vascular contraction, thus diminishing the amount of secretion of the gland. His technique was as follows :—

" A tube having a penetration of six or seven on the radio-chrometer scale was used, allowing one milliampere of current to pass through it. The anode being placed 12 inches from the gland, the patient's face and chest are well protected with tinfoil, allowing only the neck to be exposed to the X-ray. The exposed part is covered with five or six layers of wet gauze which acts as a filter absorbing some of the softer rays, and catching any electrified particles that may be projected from the tube to the patient. . . . The exposure, lasting from ten to fifteen minutes, is given three times a week at first, and later once or twice a week. The exposures are discontinued on the first indication of redness of the skin, to be taken up again as soon as they may be without danger of a severe dermatitis."

In addition, tonic electrical treatment and the exclusion of meat from the dietary are recommended.

Under this treatment the gland becomes smaller and harder, and the symptoms of the disease gradually lessen, and may eventually quite disappear. Relapse may be guarded against by infrequent exposures for a considerable time after the recovery is complete. J. GODWIN GREENFIELD.

TREATMENT OF FACIAL PARALYSIS DUE TO MASTOID (410) DISEASE OR TO THE MASTOID OPERATION.

F. SYDENHAM, *Brit. Med. Journ.*, May 8, 1909, p. 1113.

FACIO-HYPOGLOSSAL anastomosis, although furnishing a good result in these cases of facial paralysis, leaves a disfiguring scar, and this consideration led the author to try joining the two ends of the divided nerve in the course of the aqueduct of Fallopius at the site of injury. A boy, aged 5 years, was subjected to the complete mastoid operation during which the facial nerve was divided, the condition being recognised at the operation. Two days later the posterior wound was opened up and a piece of silkworm gut put into the severed portion of the aqueduct to serve as a scaffolding for the regenerating nerve. The first signs of recovery appeared in three months, and eventually no signs of the facial paralysis remained. This proceeding can be carried out at once, whereas facio-hypoglossal anastomosis must be deferred until the ear has quite healed. It is also, in the opinion of the writer, an easier operation.

HENRY J. DUNBAR.

ENDANGERMENT OF THE CORNEA FROM OPERATIVE RE- (411) MOVAL OF THE GASSERIAN GANGLION. (Die Gefährdung der Hornhaut durch die operative Entfernung der Ganglion Gasseri.)

HÖLLNER (Berlin), *Münch. med. Wchnschr.*, Dec. 8, 1908.

THE author examined twelve patients who had had their Gasserian ganglia removed, the interval since the time of operation varying from ten weeks to ten years. The sensibility of the cornea was tested in all cases, and it was also examined microscopically after treatment by fluorescin. In ten of the twelve cases the cornea had become diseased; in the other two cases the tactile sensibility in the region supplied by the ophthalmic branch of the fifth nerve (*e.g.* the corneal reflex) was either normal or only slightly impaired. Lasting anæsthesia of the cornea, however, is not necessarily followed by ulceration, though disturbance of its innervation is, in general, of decidedly unfavourable influence. To avoid the supposition of trophic fibres in the fifth, various authors (especially Seydel) have maintained that the *sympathetic* has the chief influence on the occurrence of this so-called *keratitis neuroparalytica*, the idea being that the sympathetic anastomoses with the Gasserian ganglion and the first branch of the trigeminal. The present writer does not, however, think that the sympathetic plays any important rôle; according to his view, the condition is not to be looked on as a necrosis following disturbance of innervation, but as an epithelial lesion frequently resulting from infection, and which can heal in the ordinary way. Still, the cutting off of the nerve-supply which results from this operation is decidedly unfavourable from a prognostic point of view, since a corneal defect of this nature is of frequent occurrence, and the disturbance of sensibility prevents the patient from paying due attention to the beginning of the disease. He therefore considers it advisable in this operation to spare the corneal nerve-supply as far as possible, but leaves it to the surgeon to determine how this may best be done.

ARTHUR J. BROCK.

Review

THE PSYCHOLOGY OF DEMENTIA PRÆCOX. C. G. JUNG (Zurich). An Authorised Translation, with an Introduction by Frederick Peterson and A. A. Brill. New York: Journal of Nervous and Mental Disease Publishing Co., 1909. $2.

THIS is the third monograph in a series published by the *Journal of Nervous and Mental Disease.* It is a work of 153 pages, comprised of five chapters, with an introduction by the translators.

In the introduction the translators refer to the new life which Kraeplin has introduced into psychiatry, but declare that he has totally ignored individual psychology, without which, and a knowledge of the influence of individuality, no real classification is possible. They refer to the work along this line of investigation, which has been done by Bleuler and Jung, Breuer and Freud; also to the association experiments carried on by Jung and Riklin. By the brief illustrations and references to these works, they are able to give an intimation of the ideas expanded in "The Psychology of Dementia Præcox." An attempt is made to show that, just as in normal individuals and in hysteria, the complex continues to play its part in dementia præcox, and the psychosis tends to actualize the repressed wishes from normal life. With such an understanding, the otherwise known absurdities and incomprehensible things become clear.

Chapter I. discusses theoretical views on the psychology of Dementia Præcox; Chapter II., the emotional complex and its general action on the psyche; Chapter III., the influence of the emotional complex on association; Chapter IV., Dementia Præcox and Hysteria, a Parallel; Chapter V. gives the analysis of a case of Paranoid Dementia.

The last chapter is a most valuable one, as it gives, in a concise form, the method for the analysis of a given case according to the views of the author. Altogether, the monograph deserves careful consideration, and the admirable translation should do much toward making this possible. C. H. Holmes.

Obituary

PROFESSOR D. J. CUNNINGHAM.

The neurological world has learned with the deepest regret of the death of Dr D. J. Cunningham, Professor of Anatomy in the University of Edinburgh, at the early age of sixty-one, after a long and painful illness. Professor Cunningham's name has been associated with scientific anatomy and neurology since the year 1876, when he wrote his thesis on "The Anatomy of the Cetacea" for the degree of M.D. He was for six years Senior Demonstrator of Anatomy in the University of Edinburgh. In 1882 he was called to Dublin, and filled for a year the Chair of Anatomy of the Royal College of Surgeons, and for twenty years thereafter he occupied the corresponding Chair in Trinity College, Dublin. In 1893 he was invited by the Curators of the University of Edinburgh to fill the Chair of Anatomy vacated by Sir William Turner on his promotion to the post of Principal of the University.

Neither at Dublin nor at Edinburgh did Professor Cunningham, while developing his department to the highest pitch of efficiency, limit himself to his university duties. He took an immediate personal interest in the Royal Irish Academy, the Royal Zoological Society of Ireland, and the Royal Dublin Society; and in Edinburgh, besides other public work, he was one of the secretaries of the Royal Society. Amidst all those duties he laboured unceasingly for the development of medical science. His text-book of Anatomy is a model of what such a work should be—concise, clear, written with an accurate sense of perspective, and fully and appropriately illustrated. His original communications on neurological subjects are many and important. We may mention here those "On the Lumbar Curve in Man and the Apes" (1886), "On the Surface Anatomy of the Cerebral Hemispheres" (1892), published by the Royal Irish Academy; also an important "Memoir on the Relationship between Giantism and Acromegaly," contributed to the *Transactions* of the same Academy in 1891, and a "Memoir on the Microcephalic Idiot" (1895), published in the *Transactions of the Royal Dublin Society*. It is marvellous to think how Cunningham amid all the demands on his attention found time to accomplish so much original work, and he had much material in his hands waiting to be worked up.

Cunningham's personality exerted a remarkable influence for good on everyone with whom he came into contact. His interest in the students in the university was unwearied, and he never lost an opportunity of lending a helping hand to anyone in a difficulty. It was impossible to come into contact with him without feeling that one had in him a friend. Those who were in scientific sympathy with him marvelled at the depth of his knowledge and at his penetration, and many a one owes to Professor Cunningham the stimulus which has given a scientific direction to his life's work. As a writer in the *Scotsman* newspaper has recently well said: "To the university and to science his death is nothing short of a calamity, while to his friends it has brought a sense of desolation."

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Review

of

Neurology and Psychiatry

Original Articles

THE PATHOLOGY OF DYSCHIRIA.

In Two Parts. Part I.

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I. Introduction.

As the result of a number of observations, some of which will presently be related, I have been led to reopen the problem of allochiria, one that has attracted little or no interest for many years past. In a previous paper (29) the clinical aspects of the problem were considered in detail, and perhaps the most satisfactory way of recalling the new standpoint there adopted would be to quote a selection of the conclusions that summarised the paper.

"Under the name of allochiria two fundamentally different conditions have hitherto been confounded. A patient's mistake in determining the side of a stimulus may be:—(1) part of a general defect in localisation—alloæsthesia, or (2) a specific defect independent of any error in localisation—dyschiria. The name allochiria has further been incorrectly applied—as in the terms electro-motor and reflex allochiria — to symptoms which are in no way related to either of these conditions.

"Dyschiria may be defined as a state in which there is constantly either ignorance or error in the patient's mind as to the side of given stimuli, quite independent of any defect in sensorial acuity or in the power of localisation. This corresponds closely with the definition of allochiria given by Obersteiner, though he did not distinguish the condition from alloæsthesia.

"There are three stages of dyschiria: achiria, in which the patient has no knowledge as to the side of the stimulus; allochiria, in which he refers the stimulus to the corresponding point on the opposite side; and synchiria, in which he refers it to both sides; there are three subvarieties of the last-named.

"All writers, subsequent to Obersteiner, have abstracted one feature from his definition, namely, the reference of the stimulus to the opposite side, and have used it to define allochiria. It is suggested that the term allochiria be always used in this its current sense, with the important proviso, however, insisted on by Obersteiner, that the symptom is independent of any defect in sensorial acuity or in the power of localisation. The significance of this proviso has hitherto been entirely overlooked, and even Obersteiner did not recognise that a direct corollary of it is the separation of the alloæsthesic from the allochiric error.

"There are seven precise clinical features that enable a differential diagnosis between alloæsthesia and allochiria to be made with certainty.

"Dyschiric manifestations may be general in distribution, or may relate only to certain segments of the body. There are characteristic introspective, motor and sensory manifestations of each member of the group. The last-mentioned may occur in connection with all varieties of stimuli or with only some. The motor allochiria has been unnecessarily termed 'allokinesia.' Sensation resulting from stimulation of a dyschiric part has six peculiar attributes, which I have grouped under the designation 'phrictopathic.'"

The first part of the present paper is a condensed account of a clinical study of two cases of dyschiria, and serves to afford both confirmatory evidence in support of the position taken up in the previous paper, together with an amplification of the description of dyschiria there given, and a material basis of fact from which the problems of pathology can be investigated. The later part, dealing with the pathology of dyschiria, has been divided into two, as it was thought advantageous that consideration of the problems concerning the essential nature of the varieties of dyschiria should precede discussion of the pathogenesis or mode of origin of them. Throughout an attempt has been made to simplify the problems at issue, and to deal with only the more elementary of them. I hope later to publish an account of some further experimental observations, together with a discussion of some of the more recondite aspects of the subject. The conclusions offered at the end of the present paper are therefore to be regarded as only the necessary preliminaries to a more exhaustive consideration of the problems concerned.

II. STUDY OF TWO CASES OF DYSCHIRIA.

CASE A. *Hysteria. Unilateral Dyschiria.*—I am indebted to Dr Rose Bradford for the opportunity of investigating this case, and for permission to publish an account of it. The patient was a man of thirty-one. He was suffering from severe hysteria that followed on a railway accident he had met with six years previously. He had, amongst other hysterical symptoms, complete bilateral amaurosis and ageusia, profound retro-anterograde systematized amnesia, and recurring "Dämmerzustände," accompanied by very severe pain in the head. One aspect of his sensorial state has already been described elsewhere (26), and the present account will be confined to the dyschiric manifestations.

At the outset it should be stated that the case was an instance of that very rare condition, pure hysteria. The patient's freedom from neurasthenic complications was very striking, and his courageous endurance and clear-sighted intelligence were invaluable aids in the study of the symptoms, for they rendered possible an introspective analysis that elucidated problems otherwise difficult or impossible of solution.

During two years of treatment, which ended in recovery, the symptoms now in question passed through various stages, and it will conduce to clearness if we divide these into four: anæsthesia, achiria, allochiria, and synchiria respectively. They will be described in this order, which represents the relative degree of the disaggregation present, and in each the sensory, motor, and introspective features will be separately considered.

First Stage: Hemianæsthesia.

A. *Sensory.*—There was anæsthesia of the right half of the body, implicating all the accessible mucous membranes, and everywhere sharply marked off by the middle line. The anæsthesia was complete; tactile, painful, electrical and thermal stimuli, all equally failed to elicit any response. Catalepsy could always be easily induced on this side. Sensibility on the left side was quite normal.

B. *Motor.*—The left side was quite normal also in this respect. On being asked to carry out any movement on the right side, however, the patient failed to comprehend the order, merely feeling vaguely that he was being asked to do something out of his power; the reason for this will be made clearer when we consider the introspective aspect. He further had an intuition that his failure made him look foolish because it was something simple that was being asked of him, something which other men could do easily.

In spite of this fact, certain habitual and automatic movements were often carried out by the right hand, so that the defect was limited to conscious processes. Further, if he was first asked to perform a simple movement with the left hand and then the request made "Now do the same with the other hand"—the word "right" not being used—he would make strenuous attempts to carry out the request; even then, however, he usually failed to do more than move the right hand a few inches, although intense effort was visibly being employed.

When asked to touch with the left hand a point on the right side of the body, he had the very greatest difficulty in doing it. Under no circumstances could he be got to touch any point on the right side with the right hand, and one could get him to touch with this hand points on the left side only by the device of not using the word "right," but by saying "Now with the other hand" just after he had used the left; even then it was exceedingly difficult.

C. *Introspective.*—The most striking feature in this respect was that the patient not only could feel nothing *with* the right side, but could feel nothing *of* the right side; in other words, so far as feeling went, he had no right side to his body. This loss was so complete that the patient's mental attitude on the subject must be described in some detail.

(I.) *Right-Sidedness.*—He was, of course, aware that, like other men, he had two pairs of limbs and two sides to his body, but this knowledge was barren, abstract and devoid of meaning; as a matter of direct feeling a man was for him a one-sided creature, and it was only by constantly reminding himself that he could remember the contrary. The absence of meaning from the knowledge was more complete in the case of his own body, so that he looked upon himself as something apart, as one differing from other men in having only one side; at the same time he had no clear idea as to wherein this difference lay, nor could he imagine what it would feel like to have two sides or what advantage could be derived therefrom.

II. *Left-Sidedness.*—He looked upon his left side not as being a whole, as might have been expected from the foregoing, but definitely as being a half of something, the other half of which was missing. In fact, he felt an abrupt cleft in the middle line, at which his body seemed suddenly to stop. Further, he was clear that this half that remained was a *left* half, though he could not express the meaning of leftness because of his ignorance of its complement. When asked, "What is meant by left-sided?" he would indicate his left side and say "something on this side," whereas when asked, "What is meant by right-sided?" he invariably replied "I don't know." He therefore regarded the question of restoration of feeling in the other half of his body as probably meaning the addition of another left half, though he had a vague suspicion that it might mean the addition of something differing from his present left half in some undefined way which he could not understand.

III. *Right-Handedness.*—He had no conception of what right-handedness meant, or in what way it differed from left-handedness. Consequently he had no idea of the functions that are specifically right-handed, for being originally a right-handed man he lost all knowledge of these with the loss of his right side. He avoided all conversation in which the subject occurred, for whenever his infirmity became evident he experienced great annoyance. Thus if he was asked by a comrade whether a given nut or screw was a right-handed or left-handed one, he would get out of the difficulty by offering to help with the task going forward.

IV. *Left-Handedness.*—Here again he seemed to retain some conception of the meaning of this term. He realised that a left-handed person was somehow anomalous, that he was at a disadvantage in the use of tools, and that left-handedness was generally an impediment. This he felt as an intuition; he could in no way explain its significance or give any further description of the term.

Summary of Anæsthetic Stage.

1. Complete and total anæsthesia on the right half of the body.
2. Complete amnesia for the feelings of right-sidedness and right-handedness, and for the meaning of these terms.

Transition from Anæsthetic to Achiric Stage.

The essential feature of this transition was the recovery of the sensorial acuity of the right half of the body. This was gradual, and came about in the following way:—The first sign of recovering sensibility was an intensely severe pain at a localised spot on the right side of the head—the very spot, as it later transpired, that had been struck during the accident—which occurred on the application of a strong faradic current to the right foot. In Bosc's case of allochiria (1) the same phenomenon was noticed. Subsequent stimuli always caused this pain in the head, though it was not so severe as at first. Then, in addition to the head-pain came an intensely disagreeable "shuddering" sensation. He could not say where he felt this; it seemed to be in space at some indefinable distance from his real body; it was foreign, strange, and essentially not part of himself. The various normal attributes of sensation, nature, quality, position, etc., only gradually appeared. The sensibility passed through all stages of acuity before reaching the normal; thus sensation was elicited at first only with strong stimuli, later with weak ones also.

Second Stage: Achiria.

A. *Sensory.*—After the transitional stage was passed through and achiria definitely developed, the sensorial acuity was absolutely normal. I wish to emphasise this fact, for it has a decisive importance in connection with the theory of the condition. There was no hypoæsthesia to the most delicate tests, and every attribute of a stimulus could be accurately determined except the one point of its sidedness. The patient could localise a stimulus applied on the right side precisely as well as one applied on the normal left side, but he had not the least idea as to which side it was on; there was no feeling of sidedness attached to it. It obviously was not on the left side, the feeling of which he knew. It could not be on any other side, for he knew of no other side; the expression "right side" conveyed no meaning to his mind and aroused no feeling of a side at all. This state of affairs applied equally to all kinds of stimuli. The patient could thus distinguish the precise nature of stimuli applied to the right side, their quality, temperature, exact locality, etc., as well as a normal individual, but he had no notion whatever of their side.

Any sensation evoked by right-sided stimuli had the following six peculiar features, which I have grouped under the designation "Phrictopathic" (27). These were present in every stage of dyschiria, but as they were most marked in the achiric stage I shall briefly mention them here as they then appeared:—

I. Abnormal persistence. A momentary stimulus evoked, instead of a momentary sensation, one that lasted in unabated intensity for fifty to sixty seconds.

II. Delay of conscious reaction-time. An interval of between four and six seconds elapsed before the sensation was consciously appreciated. This delay has been noted in cases of allochiria by Bosc (2), Janet (17), and others.

III. Non-perception when a more normal sensation is present. The sensation was altogether prevented from being appreciated if a stimulus was at the same time applied to any part of the normal left side, so that if the patient was touched on both sides at the same time he felt only one sensation, the normal one on the left side. Further, if any part of the left side was touched while the patient was still feeling the unduly persisting sensation that followed a touch on the right side, this abnormal sensation instantly ceased. I am not aware that any similar observation has been previously described.

IV. Tendency to immediate motor response. The stimulus was followed by an instantaneous and irresistible start on the part of the patient.

V. Disagreeable quality. This is the most striking of all the attributes. The quality was not one of pure pain, though it was always exceedingly unpleasant. The sensation radiated widely, often along the whole length of the body. When most marked it would be described only as a horrible shuddering, the objective manifestations of which it was painful to witness. In Janet's case of achiria, where the feature was only slightly marked, he describes it as "une sensation vague de quelque chose de gênant . . . . ce n'est pas une douleur proprement dite" (15).

VI. Impairment of the sense of personal ownership of the part. This has been described above; in the achiric stage the feeling of personal ownership of the part stimulated was practically absent.

B. *Motor.*—The only difference in this respect between the first and second stages was that in the latter the patient could be got, by the indirect means mentioned above, to exercise rather more power with the right side.

C. *Introspective.*—The introspective attitude toward a part being stimulated has been referred to above, and the peculiar foreignness of the sensation pointed out.

Spontaneous introspection, *i.e.* not during stimulation, showed only one change from the first stage, to wit: transition from the anæsthetic to the achiric stage was accompanied by a peculiar feeling as though the *left* side were being powerfully drawn in towards the middle line. This became almost complete when achiria was reached, so that the left side, and therefore the whole body, felt as though it were situate in one plane, the middle line of the body. The abducted left arm felt no further from the middle line than did the shoulder; thus the patient seemed to himself in this stage to occupy two dimensions instead of three. The feeling was accompanied by a state of great misery, which the patient described as "feeling shrunken, decrepit, and good for nothing."

Summary of Achiric Stage.

1. Complete amnesia for the right side, except when it was being stimulated.
2. Complete amnesia for the feelings of right-sidedness, dextrality[1] and right-handedness under all circumstances.
3. Sensorial acuity absolutely normal on right side, but presence of the six phrictopathic features to a marked degree; impersonal feeling in part stimulated.
4. Loss of feeling of lateral extension on the otherwise normal side.[2]

Third Stage: Allochiria.

The motor and introspective aspects of allochiria have an important bearing on the theory of the condition, and as they have hitherto been largely overlooked I shall describe them in some detail.

A. *Sensory.*—As in the achiric stage, the sensory acuity on the right side was absolutely normal in all respects. Similarly all sensations arising from stimuli applied to this side were accompanied by the six phrictopathic features mentioned above, though these were less marked in this stage; for instance, the delay in reaction-time was three seconds, the abnormal persistence reached to thirty-five seconds, and the diffuse shudder was only very disagreeable, no longer horrible.

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[1] This term is used to indicate the superior capacity that one side, usually the right, shows over the other.

[2] This symptom has only an indirect relation to dyschiria, and so the pathogenesis of it will not be discussed in this paper.

In striking contrast to the achiric stage, however, the sensations now evoked by right-sided stimulation were accompanied by a definite feeling of sidedness, but this was left-sidedness. In other words, all stimuli applied to the right side were invariably referred to the left. This was done with an air of the most absolute conviction, so that the patient felt no more certain that a stimulus was on the left side when it really was applied on this side than he did when it was applied on the right. Other distinctions, however, between the two sets of stimuli will be described in connection with the introspective aspects.

Three further remarks must be made in the present connection. The transference applied equally to all kinds of stimuli, tactile, thermal, electric or painful; it was thus general, and did not show the selectivity sometimes met with in allochiria. It was absolutely invariable; not some or most stimuli were referred to the left, but all without exception. Lastly, the place on the opposite side to which they were referred corresponded precisely with the symmetrical point touched, so that, apart from the error in side, the patient localised a touch applied to the right side exactly as well as one applied to the left.

B. *Motor.*—When the patient was asked to make a simple movement on the right side he did not, as in the achiric stage, merely fail to understand the request, but he promptly carried it out—on the left side. This was done invariably and with no trace of doubt as to the correctness of the performance.

The question of right-sidedness, as well as several more complex questions concerning the motor functions, will be considered in relation to the introspective aspect. Two points only will be dealt with here.

In the first place it is clear that dextral functions[1] were under certain circumstances transferred to the left hand. This may be illustrated by considering a specifically dextral act, such as that of winding a watch or using a screwdriver. If the patient was asked to insert a screw with his right hand, he would take the screwdriver with his left and use it quite dexterously and naturally. If, on the contrary, he was asked to do so with the left hand, he would again take the tool with this hand, but would now be practically unable to use it, merely fumbling with it in the clumsiest way. If one simply put the screwdriver into the right hand it was not used, not because the hand seemed specially clumsy, but because the patient did not seem to know how to use it; if one put the tool into the left hand he used it quite dextrally if he thought he was engaged with the right hand, but not if he thought he was engaged with the left. It was astonishing to witness the change that took place if, while he was in the act of confidently using the tool in a dextral manner with the left hand, one suddenly said, "Now use it with the left hand"; under these circumstances he would become puzzled, drop the tool, and pick it up again with a hand that was anatomically the same but functionally an entirely different member. In other words, the left hand was used either right-handedly or left-handedly, according to whether the patient felt he was using the right or left hand respectively.

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[1] *I.e.* functions for which one hand, usually the right, manifests superiority. I have recently published a paper (35) dealing with the nomenclature of this subject.

In the second place, this transference of dextral functions to the left side concerned, like all dyschiric manifestations, only conscious processes. For habitual movements subconsciously and automatically performed in daily life the patient would use the right hand normally, unless some difficulty or other element directed his conscious attention to the act, when the above mechanism appeared. This might happen during the performance of an individual act. In the instance just taken, the patient, if he were left to himself, might automatically use the screwdriver with the right hand until the last threads of the screw were reached, when he would change over to the left, under the impression that he was using the same hand throughout.

C. *Introspective.*—The left side now again felt quite normal, the feeling of lateral extension having returned.

As in the previous stages, the patient declared that he had no right side to his body; the word "right side" conveyed no meaning to him. It would seem a natural inference that, a left side being present but no right, therefore, as before, only one side was present. This was how the patient himself expressed it, and it was some little time before I discovered that this apparently obvious conclusion was incorrect. Introspective analysis, towards which he showed great aversion, as will presently be described, demonstrated the following state of affairs. It was true that he could feel no right side, and that all he could feel was on the left, but it was not true that he could feel only one side. He could feel two, *both on the left.* We next ask, what was the difference between these two left sides, and how were they to be distinguished from each other? Light is thrown on this question by considering the change that had occurred in relation to certain semi-voluntary actions. If the patient was directly asked in the former stage whether he could use various right-handed implements, such as a hammer, screwdriver, etc., he was only puzzled, for, although in fact he could in an automatic manner use them with his right hand, he did not seem to know that he could, and usually had amnesia for the various occasions on which he had done so. On the contrary, if in the present stage he was asked a similar question, he promptly replied in the affirmative, and said that he could certainly use them—with the left hand. In fact, however, he still used them with the right hand. Therefore the transition to the present stage seemed to him to signify an accession of further capacity, for, whereas formerly he could, so he thought, do only left-handed things, he could now also do things that were not left-handed, though he did not specifically recognise that these were right-handed. Later on, when he recovered completely from his allochiric condition and recognised that these right-handed things were being done by the right hand—as habitually they really had been all along—he translated this fact as a loss of the extraordinary power that the left hand had been enjoying. This subsequent interpretation thus ran as follows: he had lost the use and feeling of his right side, and gradually his left side learnt to be able to do things it had previously been unable to do; with the recovery of his right side his left lost this increased capacity. When, however, I demonstrated to him that he was totally unable to use a screwdriver with the same left hand that, according to him, had recently been so expert in such matters, he was considerably puzzled, for of course he knew that when a left hand replaced an injured right hand and learnt its work, it generally retained its acquired capacity, at all events for a long time. He had previously encountered difficulties in the way of his explanation, and these had caused him such intellectual bewilderment that he had striven, ultimately with considerable success, to ignore them. The most important of these difficulties was that he could really distinguish in feeling that he had two separate "sides," both of which, however, were on the left. There was first of all the true left side, which could perform only left-handed or ambidextral actions, and which felt to him *alive*, real and natural. Then there was a ghostly other side, which was equally beyond doubt situate on the left, and superimposable on the former side, but which could do many things that were impossible to the left, and which felt to him *dead*, unreal, strange, foreign, and as if it did not belong to him; it was not part of his real self, and actions carried out by it seemed really to be done by something else or somebody other than himself. The latter he called the "clever" or "dead" side. As is comprehensible enough, the effort to grasp this extraordinary state of affairs was one that would have embarrassed the keenest thinker, and we can sympathise with the tenacity with which the patient clung to the simple explanation given above, to wit that he still had only one side. In doing this he was greatly aided by the intense conviction that everything he felt was really on the left, for the two sides had this in common, that they gave rise to the feeling of leftness with an equal degree of certitude. It is interesting to note that in spite of this equally plain feeling of leftness in the two sides, and the strong incentive there was to submerge and ignore the differences between them, the patient never succeeded in making them feel completely identical, and, much to his discomfort, could not escape the fact that they were fundamentally two.

He showed a marked aversion towards making any analysis of his feelings that would serve to emphasise the differences between the two sides, and a strong disinclination to make any statement other than that he had only one side, a left one. I was aided in getting him to accomplish this analysis by the device of fixing his left hand at the same time that I moved the right hand, which, of course, he felt on the left side. He thus felt his left hand apparently being simultaneously moved and held still, a paradox which forced him to reopen the question as to the true identity of the two left hands.

We can now understand the following observation :—If, after the patient had moved his left arm in response to a request to move the right, he was then asked, "Was that the right arm that you moved?", at first he would apologetically reply, "It is the only arm I have." Later, when he had been induced to distinguish more clearly between his two left arms, he would say that he was moving the "clever" left one. Later still, he learnt to call this clever left arm a right arm, even though he didn't feel it to be right-sided, so that he would then answer the question in the affirmative.

From the possibility of the analysis between the two "left" arms, which at first appeared to be identical, I was led to try whether any similar distinction could be made between the two sensations evoked by stimulation of contralateral points. At first this similarly seemed impossible, for both were localised to the same spot with an equal degree of precision, and, on account of the intense conviction with which stimuli applied to the right side were felt as left-sided, the patient drew no distinction between them and stimuli really applied to the left side. He therefore was inclined at first to say that they were the same, but on carefully directing his attention to the comparison of different stimuli—without letting him know the side on which they were applied—the following differences became evident. Sensations evoked by left-sided stimulation were normal in every respect, but, as was pointed out above, those evoked by right-sided stimulation were always characterised by the six typical phrictopathic features.

On closer investigation it was further found that a stimulus applied to the right side produced, not, as was at first thought, simply a sensation referred to the corresponding point on the left side, and having the peculiar features mentioned above, but *two separate sensations* referred to the same spot. These differed just as the sensations produced by stimulation of the two sides differed. The one was felt to be on the true, "alive" side, felt natural, and lasted but a moment; the other was felt to be on the other, "dead" left side, and had all the phrictopathic features described above. The normal one was, however, delayed, so that both sensations began synchronously, though, of course, the phrictopathic one lasted longer than the other. It is again interesting to note that the conviction of the left-sidedness of stimuli applied to the right side was so absolute as to enable the patient practically to ignore the differences that distinguish the sensations elicited by right- and left-sided stimuli.

Summary of Allochiric Stage.

1. Left side normal; right side felt as a second, "clever" or "dead" left side.
2. Amnesia for the feelings of right-sidedness and right-handedness. Feeling of dextrality appreciated when the left hand was used while the patient was under the impression that it was the "clever" or "dead" left hand.
3. Orders concerning right side carried out by the corresponding part on the left, the patient feeling that the "dead" left side was moving.
4. All stimuli applied to right side invariably, and with conviction, referred to exactly corresponding point on left.
5. A stimulus applied to the right side evoked two sensations, both referred to the left side with equal conviction. One was indistinguishable in quality from a stimulus really applied to the left; the other had all the typical phrictopathic attributes.

Fourth Stage: Synchiria.

A. *Sensory.*—Here again the sensorial acuity on the right side was absolutely normal. Characteristic of the stage was the fact that every stimulus applied to the right side evoked two sensations, one referred to the right side and one to the left. At first the one on the left was felt to be more distinct, then as recovery progressed both were felt equally distinctly, and lastly the one on the right was the more distinct; there were thus three sub-stages.

There was throughout a sharp distinction between the two sensations. That referred to the left side was quite normal, of momentary duration and natural quality. That referred to the right had all the phrictopathic features mentioned above, and which need not again be detailed; these were, however, decidedly less marked than in the former stages, and the shuddering had now dwindled to a diffuse tingling that was only moderately unpleasant.

B. *Motor.*—When the patient was asked to carry out any movement with a right limb he did it simultaneously with both, under the distinct impression that he was moving only the right. He could not move a right limb alone, and if this was passively moved it felt as if both sides, which were distinctly right- and left-sided, were being moved. Thus passive movement of a right hand gave him the feeling of both hands, while active movement of both hands gave him the feeling of only the right hand, provided he thought he was moving only the right; passive movement of both hands gave him, of course, a normal feeling of both.

C. *Introspective.*—The feeling of the right side differed from that in the allochiric stage in four particulars:

1. It felt much more "alive" than in the allochiric stage, and the patient described it as "sleepy" and "strange." Consequently the sense of personal identification was now considerably more vivid in this stage, though it was still impaired.
2. Although the right side felt much more obviously part of the patient's self, yet, curiously enough, he had far less control over it than in the last stage. In the middle of carrying out any duties he was always anxious lest it might "strike work"; this it sometimes did independently of his own desires.
3. As regards the "sidedness" of the half in question, this at first seemed to be very indefinite. The patient described the half as being "out of place." It shifted between the two sides, being sometimes nearer the right, sometimes nearer the left, and sometimes in the middle line; it never felt to be quite over on the left or on the right. This shifting corresponded accurately with the three sub-stages described under the sensory aspect; thus, when the half felt on the left side of the middle line, the contralateral sensation was the more distinct of the two, and *vice versa.* A point of some little clinical importance in this connection is that when the half was very near to its normal position on the right side no contralateral sensation could be appreciated, although the homolateral sensation still showed distinct phrictopathic qualities.

4. As a consequence of the last two features, the patient in this stage was always in a state of disagreeable uncertainty, which he intensely disliked, and it was striking to witness the relief with which he would slip back into the allochiric stage, where, although the affected side felt more dead and impersonal, yet he had perfectly sure control over all its functionings.

Summary of Synchiria.

1. Right side felt more alive, more personal, but less under control; this stage was more unpleasant to the patient than the previous one.

2. The right side had no definite "sidedness" spontaneously, but the patient obtained the clearest notion of right-sidedness and dextrality by simultaneous movement of both sides.

3. Right-sided stimuli evoked two sensations—one obviously right, the other left. Either or neither might be more distinct, three sub-stages thus occurring. The contralateral sensation was a normal one, the homolateral phrictopathic.

Course of the Case.—Recovery, as has been hinted, did not progress in the even manner indicated above. Furthermore, it did not proceed uniformly over the whole side. Feeling first returned in the right thumb, then in the finger tips, a bracelet, the right ear, an anklet, the olecranon, in this order. These parts appeared to be away in the air at some indefinable distance from his body, producing a feeling of indescribable eeriness. The recovery of feeling was also gradual in degree as well as in distribution. Thus the right thumb was felt perfectly well at a time when the rest of the upper limb seemed to be made of wood, producing a feeling almost as bizarre and disagreeable as the above-mentioned one of having isolated fragments of the right side away in space and apparently unconnected with the left side.

For a greater part of the time the right side of the body was thus broken up into areas showing different stages of dyschiria, and the nice unravelling of the condition was a matter of great complexity until the characteristics of each stage were recognised and exactly defined. Much valuable information was obtained from studying the various combinations thus presented and their effect on one another, but this matter will be excluded from the present paper, which is concerned only with the problems relating to the pure types.

CASE B. *Hystero-Neurasthenia. Bilateral Dyschiria.*—The patient, a man aged 49, came to the out-patient department at the Seamen's Hospital, London, in April 1907. He had suffered for nineteen years from nocturnal epileptiform fits, which had been uninfluenced by bromide treatment. In addition he had continual somnolence and would fall asleep on the least provocation. About a week before attendance at the hospital he had a series of fits differing from all previous ones in their duration, and spent five or six hours in what seems to have been a status hystero-epilepticus. Following this a train of neurasthenic symptoms developed, which were very pronounced when I saw him. He was very timid and trembling. People, and even his wife, seemed to him to be staring at him in a significant way, and he felt that he couldn't stand this any longer, and that he was going out of his mind. The back of his head felt numb and strange, and as though it didn't belong to him. His legs felt weak and shaky, and he couldn't walk more than a couple of hundred yards. For the first time in his life he was unable to work, and this greatly depressed him. He felt "dead inside," out of the world, and unable to get into touch with outside happenings. He presented a generally confused, dazed, and almost maudlin appearance, and was evidently fast losing all grasp on his immediate environment. The importance that the existence of this neurasthenic condition has for theory will be indicated later.

On investigating the nervous system all that was found was a complete, total, bilateral analgesia. Tactile stimuli were acutely appreciated and their site and side correctly indicated. The same results were obtained whether the eyes were open or shut, but after they had been shut for a short while a change took place in the patient's general state. He sank back in a kind of sleep, evidently of a hypnoidic character, and his limbs relaxed. On now being asked to move a given part, he moved the corresponding part on the opposite side, and in addition referred all stimuli to the opposite side. There was thus present bilateral allochiria. I shall first give a short description of this state, and then mention the various modifications that occurred later.

Bilateral Allochiria.

A. *Introspective.*—The patient felt both sides of his body and was unaware that he indicated them wrongly. His feeling of them was not quite natural, a fact he expressed by saying that they seemed numb, sleepy, bloodless, and like indiarubber. Moreover, he constantly said that he felt one half of his body—which he incorrectly called the right half—much less distinctly than the other.

B. *Motor.*—When asked to perform a movement with a given limb he invariably did it with the opposite one, under the impression that he was doing it correctly. This transposition concerned other requests besides those in which the name right or left was used. For instance, on being simply asked to shake hands the patient did so with the left. When asked to move the hand he wrote with he also moved the left. He was taken at his word in this matter and told to write his name. He managed to do this with the left hand with fair legibility, although when awake he was quite unable to. On the pen being put into his right hand he handled it clumsily and made some abortive attempts to write. After a few trials, however, he was able to write and did so more legibly than with the left hand; during the progress of the act he remarked that his hand was getting "handier," and this caused a good deal of mental confusion, which ended in the temporary disappearance of all allochiric symptoms.

Certain other motor manifestations will be referred to in the next paragraph.

C. *Sensory.*—All stimuli were normally appreciated except painful ones. They were correctly localised except for their side.

1. *Single Stimulus.*—The patient invariably named the side incorrectly, but moved the correct part when indicating which member was touched. This was so whichever process, the naming or moving, was first tested.

2. *Successive Stimuli.*—The patient always felt one of these more distinctly than the other, and except on two occasions it was the one applied on the left side. This was determined in a way that will be described presently. He responded as described above, moving the limb actually touched and naming it wrongly. The observations were repeated several times, the method being

varied. Neither the order of the limbs touched nor the order of response given made any difference to the results.

3. *Simultaneous Stimuli.*—When two stimuli were simultaneously applied on corresponding contralateral points, only one was appreciated. This one was always, except on two occasions, the one really applied on the left side, as was found by comparing the sensations with those obtained by successive stimuli. It was always indicated by moving the limb actually touched, which was named incorrectly.

Considering now the results of single stimuli, we naturally inquire whether the phrictopathic features described in Case A were present here also. They were, but undoubtedly to a considerably less marked extent; this remark applies to each of the six features, which we may now mention in order.

(*a*) A momentary stimulus evoked a sensation that lasted for five or six seconds.

(*b*) The conscious reaction time was two seconds longer than normal.

(*c*) As was seen above, a stimulus applied to the right side was prevented from giving rise to any sensation by the simultaneous application of a stimulus to the left side. As there was no normal part of the body, one could not test whether the sensation resulting from a left-sided stimulus could be prevented by touching a normal part.

(*d*) There was a distinct tendency towards a motor response, in the direction of "rubbing the touch off."

(*e*) The disagreeable quality was not well marked, but one was reminded of the diffuse tingling present in Case A by the description the patient gave of the sensation evoked by a simple momentary touch as being "like a knife scraping the flesh," "like a fly crawling," "like a scratch with a nail," etc.

(*f*) The feeling of natural, personal ownership of the part stimulated was impaired, as was evident from the patient's description of it as "dead, like india-rubber, like a limb gone to sleep and yet not tingling like that"; he would say that the part belonged to him "in a way," "somehow."

As the asymmetry of this case has an important bearing on the theory of bilateral allochiria, I will relate in more detail an example of the series of experiments that demonstrated its existence.

In the typical allochiric state, as described above, the patient said that one half of his body, which he erroneously called the right half, felt less distinct than the other. No objective hypoæsthesia was detectable by careful Von Frey tests. The following single experiment, made up of fifteen separate tests, each of which was many times repeated, confirmed the truth of the introspective observation. The results were the same as regards the face, hands, and legs.

	Question.	Response.
A. *Single Stimulus.*		
1. Right touched.	Which side ?	Left.
2. Do.	Move side touched.	Right moved.
3. Left touched.	Which side ?	Right.
4. Do.	Move side touched.	Left moved.
B. *Successive Stimuli.*		
1. First right touched, then left.	Which was more distinct ?	Second.
2. Do.	Which side was more distinct ?	Right.
3. Do.	Move side of more distinct touch.	Left moved.
4. First left touched, then right.	Which was more distinct ?	First.
5. Do.	Which side was more distinct ?	Right.
6. Do.	Move side of more distinct touch.	Left moved.
C. *Simultaneous Stimuli.*		
1. Both sides touched at same time.	How many touches felt ?	One.
2. Do.	Which side was it ?	Right.
3. Do.	Move side touched.	Left moved.
4. First right side touched, then left.	Was previous touch the same as first or second of these ?	Second.
5. First left side touched, then right.	Do.	First.

The result of this experiment may be generalised as follows:

(1) During a period of bilateral allochiria, when every stimulus was referred to the opposite side, a stimulus applied to the left side evoked a sensation that felt more distinct than one evoked by a stimulus applied to the right side, and was the only one felt when stimuli were applied simultaneously to both sides.

(2) A stimulus applied to either side was indicated by the patient's moving the limb actually touched, but by his naming the side incorrectly. This contrasts with what occurred when an allochiric limb was stimulated in the unilateral case.

The above results were constantly obtained except on two occasions, when a peculiar mode of response was obtained which I shall not describe here, as it is not relevant to the subject of the present paper.

Course of the Case.—Although the patient's dyschiric manifestations were, on the whole, not very variable, there were certain differences noticed in them from time to time.

I. The most striking difference was in the *variation of the dyschiria with the patient's general mental state.* One ventured to predict on the basis of the view of dyschiria that will be described later that the dyschiric and neurasthenic symptoms would be mutually exclusive. This, in fact, was fully borne out by observation. The patient might appear on a given day after a prolonged domestic wrangle, and in a state almost of mental collapse. On such an occasion, when the neurasthenic symptoms were very prominent, the patient found it harder to subside into the somnambulic state mentioned above, and no evidences of dyschiria were ever found until this state was pretty advanced. On other days after the patient had been responding satisfactorily to psycho-therapeutic measures the neurasthenic symptoms would be almost altogether in abeyance, and he would feel clear, strong, fresh, hopeful, and in every way a more capable person. On such occasions it was always found that the dyschiric symptoms appeared in the waking state on merely closing the eyes, or even without this. This observation has an important bearing on the theory both of dyschiria and neurasthenia, and will be discussed later.

II. As regards *variations in the nature and distribution of* *the dyschiria* the chief of these were the following. In general the deficient feeling of the part was most marked in the lower limbs and least in the upper. Synchiria was never observed, but achiria was, and the following instances of it may be quoted :—

1. On certain occasions, when allochiria was present as regards all the rest of the body, the *left side of the face* was achiric and the right side quite normal. No description of this need be given, as the features of unilateral achiria were mentioned in the account of Case A. The phrictopathic characteristics were all present, and to a more marked extent than in the allochiric state. The main difference between them in the achiric stages of Cases A and B was that in the latter the loss of the sense of personal ownership of the part stimulated was never so profound as in the former.
2. On other occasions the patient declared that he could feel his right arm but not his left. On examination the *right arm* was found to be achiric and the left allochiric. Thus, a touch on the left arm was said to be on the right, and the left arm was used, under the impression it was the right, in a dextral way. A touch on the right arm was appreciated and localised, but it did not feel to be on any side. The remarks made above on the subject of phrictopathic attributes apply equally here.

III. Another point that has a bearing on the theory of dyschiria is that the *sensibility* showed some variation. Total bilateral analgesia was always complete, except on the following occasions :—

1. Right side of face of normal acuity, left side of face hypoalgesic, rest of body analgesic. It is interesting to note that at this moment the right side of the face showed no dyschiric manifestations, while the left side of the face was achiric. In other words, improvement of sensibility to pain on both sides of the face was accompanied on the one side by increase of the dyschiric defect, and on the other side by diminution of it.
2. Right side of face analgesic, rest of body hypoalgesic. This was accompanied by total bilateral allochiria.

Of simultaneous touches, one on each cheek, only the one on the left was felt, and was erroneously called right. There was no hypoæsthesia present on either side in this or on the previous instance.

3. Hypoalgesia of right hand, analgesia of rest of body. At the same time there was hypoæsthesia on the whole left side, and, to a less extent, on the right side of the face. There was no allochiria when the patient was first examined on this occasion, though it developed in a few minutes coincidently with a slight improvement in sensory acuity.

There was no diminution in sensibility except as stated above. Perusal of the above account will make it evident that the dyschiric manifestations in no way corresponded to the defects in sensibility, a matter that will be fully discussed later.

IV. The following is an illustration of a general rule that applied to this case, namely, that the feeling of left-sidedness was more easily and vividly transposed than that of right-sidedness. It occurred when bilateral allochiria was present and total except for the face, which was achiric on both sides to direct stimulation. On getting the patient to stroke his moustaches with what he incorrectly called his right hand, ordinary allochiria developed on the face, so that, for instance, he called the right moustache left, and *vice versâ*. The following four tests were then applied—

	Stimulus.	Question.	Response.
1.	Right side of face touched.	Which side?	Left.
2.	Do. do.	Is this the right?	No, it is the left.
3.	Left side do.	Which side?	Right.
4.	Do. do.	Is this the left?	No, it has no side.

(*To be continued.*)

NOTE ON THE GEOGRAPHICAL DISTRIBUTION OF TABES DORSALIS.

By R. T. WILLIAMSON, M.D., F.R.C.P., F.R.G.S.

THE strongest evidence in favour of the importance of syphilis in the causation of tabes dorsalis is the frequency of a history of previous syphilitic infection (certain or probable) in tabetic cases (in Erb's statistics in 89 per cent.).

Against this view it has been urged, amongst other objections, that in certain countries and races, in which syphilis is exceedingly common, tabes is extremely rare, or does not occur.

Reliable statistics as to the frequency of tabes in various countries are difficult to obtain. Usually death does not occur until many years after the onset of the disease, and the mortality statistics are not free from objections, but they are probably as reliable for comparison as any other statistics with reference to the frequency of tabes. It is only in a few countries, however, that separate figures for tabes are given in the annual mortality statistics.

I have read through the various articles and notes, which I have been able to find in medical literature, respecting the rarity of tabes in certain countries where syphilis is very prevalent. In these countries the estimate of the rarity of the disease is based simply on the statements of the experience of medical men who have practised in such regions. In many instances these statements as to the rarity of tabes appear to the writer, for various reasons, to be so indefinite and of such little value that they are not worth quoting. Those which appear to be of most value are mentioned in this note. These and the few mortality statistics which I have been able to collect may be of interest to readers of this *Review* who are devoting attention to the ætiology of tabes.

Mortality from Tabes Dorsalis.[1]

Country or Town.	Death-rate from tabes dorsalis per 100,000 living.
England and Wales	1·7
London	1·9
Manchester (average of four years)	1·2
Scotland (1906)	1·1
Ireland	1·1
Malta and Gozo	0·9
Paris (1906)	2·6
Berlin (1906)	6·4
„ (1905)	5·8
Buda-Pest (1906)	7·4
„ (1905)	5·1

[1] These statistics are for the year 1907, unless otherwise indicated.

Country or Town.	Death-rate from tabes dorsalis per 100,000 living.
Madrid (1906)	0·36
Buenos Aires	0·97
United States of America (Registration area)	2·7
„ Registration Cities	2·8
„ Rural districts	2·6
„ Cities of California	3·3
„ Cities of Colorado	7·4
„ „ Maryland	3·1
„ „ New Hampshire	4·5
„ „ New York	2·7
„ Rural district of New York	3·4
„ Cities of Pennsylvania	3·1
„ „ Vermont	5·5
„ Rhode Island	3·9

In Mexico (in the Federal States and in Vera Cruz), statistics in the last report (1903) indicated that the death-rate from tabes was less than 1 per 100,000.

In England and Wales the number of deaths registered as due to tabes was 584 in 1907; in Scotland (1906), 54; in Ireland, 52; in London (registration district of London), 94; in Berlin, 132 in 1906, 118 in 1905; in Paris, 71 in 1906; in Buda-Pest, 59 in 1906, 40 in 1905.

The high mortality in Buda-Pest (7·4), in Berlin (6·4), and in Colorado, U.S.A. (7·4) is noteworthy. Unless there are sources of fallacy respecting the statistics, they appear to show that there are many more deaths from tabes in Berlin than in London or Paris, and that the mortality from tabes per 100,000 living is more than twice as great in Berlin as in Paris, and three times as great in Berlin and in Buda-Pest as in London. In Buda-Pest, even when the statistics were restricted to the *residents* of this city who had died of tabes, and deaths of tabetic patients who were not residents in Buda-Pest were excluded, the mortality was still high, 6·4 per 100,000 living.

At the Manchester Royal Infirmary, amongst 14,575 *medical* in-patients there were 2456 cases of nervous disease, of which 118 were cases of tabes—1 case of tabes in every 20 *nervous* *cases.* In the Charité Hospital, Berlin, amongst 1136 nervous cases there were 138 of tabes, about 1 in 8; in one clinic the proportion was 1 case of tabes in every 11 nervous cases, in another clinic 1 in every 6. In the Municipal Hospitals of Berlin (1905), amongst 2219 nervous cases (excluding cases of insanity) there were 136 tabetic patients—1 in 16. In all of the public hospitals of Berlin, amongst 4144 nervous cases (excluding insanity) there were 328 cases of tabes—1 case of tabes amongst every 12 or 13 nervous cases. These figures are not perhaps quite satisfactory for comparison with Manchester statistics, but they appear to indicate that tabes is probably much more common in large hospitals in Berlin than in the largest hospital in Manchester. In the Paris hospitals the proportion was 1 case of tabes in 46 cases of nervous diseases (excluding insanity). But in these figures the cases of nervous diseases in the children's hospital were included. Reducing these figures by about one-third on account of the children patients, there is still the proportion of 1 to 30—much less than in Berlin.

Rarity of Tabes in Certain Countries.

According to L. Glück (1), who practised for fifteen years in Bosnia and Herzegovina, syphilis is exceedingly common in these countries. Tertiary affections of the skin and mucous membranes are often seen, and syphilitic diseases of the bones and internal organs, including the nervous system, are not infrequent. But no case of tabes ever came under his observation. Four other medical colleagues, who had practised for periods of from eight to twelve years in these countries, had not seen any case of tabes, though syphilis of the nervous system had been observed by them. Kobler reports that amongst 3000 patients in the hospital at Sarajevo there was no case of tabes. These six medical men had not met with a single case of tabes in Bosnia and Herzegovina.

More recently Näcke (2) has drawn attention to the fact that syphilis is very common in Bosnia and Herzegovina; it is usually not treated, and often it is of a severe form, but tabes is quite exceptional. [Though tabes may be very rare in these countries, cases of the disease have been observed.]

According to Motschutkowsky (3), in many districts of Russia where syphilis is very frequent, tabes is not observed.

Neftel (4) states that syphilis is extremely common in Kirghiz and Central Asia, almost every man and woman being affected, but tabes is very rare. No case was seen by him during six months' practice in Kirghiz.

Holzinger (5) states that syphilis is very common in Abyssinia, but tabes very rare. He adds that amongst 107 nervous cases there were six of tabes—a proportion which is not less than that at the Manchester Royal Infirmary. Hence these figures do not furnish evidence of the rarity of tabes; they would rather indicate that it is as common in Abyssinia as in Manchester.

According to Ostrowskich (6), tabes is very rare in North Persia, though syphilis is so common. Amongst 7000 hospital out-patients there was no case of tabes.

It has been stated that, though syphilis is very common in Japan, tabes is very rare. This statement can hardly be accepted now, since numerous cases of tabes are mentioned in Japanese medical literature. Thus Nose (7) has published statistics respecting the etiology of ninety-six cases of tabes in Japan, which were collected from three hospital clinics and the private practices of two medical men.

In Algiers, according to Scherb (8), syphilis is exceedingly frequent, but tabes and general paralysis very rare amongst the Arabs; whilst the Jews in Algiers suffer from both tabes and general paralysis not infrequently.

It has been stated that tabes is very rare amongst *negroes*. In the United States, however, many undoubted instances of the disease amongst negroes have been recorded in recent years, and it is probable that the disease is more common amongst them than has been supposed; but there can be no doubt, from the statements published by American neurologists, that negroes, especially pure-blood negroes, suffer much less frequently than the white races, in spite of the frequency of syphilis amongst negroes. The evidence and recorded cases have been collected by Hecht (10). He considers that "Aryan admixture is essential to the production of tabes in the negro."

The evidence collected by Dr Burr (11), and published in 1892, clearly indicates the rarity of tabes amongst the negroes in the United States up to that year. The experience of a large number of American physicians is recorded in favour of this statement.

The statistics for the United States for 1907 give the mortality from tabes dorsalis amongst the white population of the cities of Maryland as 3·3 per 100,000 living, amongst the coloured population 2·1 ; but I have not been able to ascertain whether the statistics respecting the coloured population are based on sufficiently large figures or not.

According to Dr Mott (12), syphilis is common amongst the negroes of Jamaica, but Dr Henderson of Kingston informed him that tabes was uncommon.

It has been said that the Jews suffer less from tabes than Christians, in Russia and other countries; but probably the difference is not very great in most countries. In Buda-Pest in 1905 and 1906, amongst 99 fatal cases of tabes 16 were Jews. 23·5 per cent. of the inhabitants of Buda-Pest were Jews at this date.

Ferrier (14) has said, " If tabes can be shown to exist, or to have existed, in any land or people among whom syphilis has never entered, and who have never had communication with any outside syphilised world, the exclusively syphilitic origin of tabes will have to be abandoned, but not till then."

But as Clemow (15) remarks (in his work on the geography of disease), almost the only regions on the earth's surface where syphilis has not been seen are Greenland, and certain remote parts of North and South America and South Africa, inhabited by tribes who have had little or no intercourse with the rest of the world. Syphilis is said to be also very rare or unknown in Iceland.

According to Mott (12), "In Iceland, the rural districts of Ireland and Sweden, syphilis is very rare or unknown, likewise tabes and general paralysis."

My friend, Dr S. K. Hutton (16), has spent five years (1903-8) in practice amongst the Eskimos of Labrador. He states in his recent monograph, " On the Health and Diseases of the Eskimos," that locomotor ataxia does not occur amongst the Eskimos of that region, and that "general paralysis of the insane is also absent." I know that Dr Hutton is such a careful observer, and that before leaving England for Labrador he was so very well acquainted with the symptoms of tabes, even in its early stages, that I attach much importance to his statements. He draws attention to the terrible sexual excess, sexual abuse, and immorality of the Eskimos, but he believes that syphilis is quite a new disease amongst them. Syphilis was brought to the Labrador Coast by a party of Eskimos who had been exported for exhibition purposes by a speculator; two men had symptoms of syphilis at the time of their return from the exhibition in 1902, and from this starting point the disease spread rapidly. During his residence in Labrador (1903-8) Dr Hutton did not see any cases of tertiary syphilis, but he considers that a sufficient time has not yet elapsed to enable him to state that the Eskimos are exempt from tertiary syphilis. Dr Hutton's experience is of much interest. It is practically this—no tabes in a race amongst whom syphilis had only been introduced just before his practice commenced.

Though the evidence given in this article cannot be regarded as free from objections, it appears sufficient to indicate that in certain countries and races, in which syphilis was very common, tabes was exceedingly rare. It is well known that even in Western Europe, where tabes is most frequently met with, only a small percentage (variously estimated as from 1 to 5 per cent.) of those who are infected with syphilis develop tabes afterwards.

But the importance of syphilis or venereal disease in the etiology of tabes appears to the writer to be beyond question. Especially valuable are the statistics of Sir William Gowers that amongst 100 consecutive male cases of tabes, syphilis was certain or probable in 80, and that in none of the 100 cases could syphilis be excluded by the absence of any exposure to its risks.

Amongst my own cases of tabes the history of syphilis, or of venereal disease, or of exposure to the risks of syphilis has been obtained in such a large percentage of cases—obtained so very much more frequently than in other chronic diseases of the nervous system—that the relation appears beyond question. In only a very few of my cases has the patient denied venereal disease or exposure to the risks of syphilis, and in none of these cases have I felt satisfied that the statement was true. But in many of my cases the syphilis was of a very mild form, and in other cases there was a history of venereal disease but not of true syphilis. Hitzig's suggestion of the possibility of the poison producing tabes being introduced into the system from a soft chancre, as well as by true syphilis, appears worthy of more attention than it has yet received. The importance of overstrain and exhaustion, in association with syphilis, in the production of tabes has been specially emphasised by Edinger. Also, it has been suggested that possibly there is a certain form of the syphilitic poison which is specially liable to produce tabes, just as in some epidemics of infectious diseases the poison has a special tendency to produce complications in certain systems (respiratory, nervous, etc.), whilst in other epidemics this tendency is not observed.

In the countries where tabes is so rare and syphilis so common two explanations appear the most probable—either that the inhabitants of these lands are not so much exposed to the influence of overstrain of the nervous system, or that the syphilitic poison has not the same tendency to effect the nervous system as in England, France and Germany.

In course of time, it is probable that tabes will be observed more frequently in those countries where it has been said to be so rare. The nervous overstrain of modern life will probably increase, or the form of syphilis may change or the syphilis of Western Europe may be introduced into these countries, and tabes may then become more common.

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Abstracts

ANATOMY.

CONTRIBUTION TO THE KNOWLEDGE OF THE FINE STRUCTURE OF THE HYPOPHYSIS.

(412) **(Contributo alla conoscenza della fina struttura dell' ipofisi.)** E. SAVAGNONE, *Riv. Ital. di Neuropatol.*, Gen. 1909, p. 8.

THE hypophysis of the cat and man were observed. The method of Cajal modified by Pusateri was used. The rich plexus of nerve fibres in the posterior portion of the gland was thus brought into evidence: the existence of this plexus of fibres has been denied by some observers. The fibres after crossing one another form a plexus at the periphery of the posterior lobe. Many fibres form a network round the special cells, which are found in the hypophysis. The fibres come from the cerebrum and pass through the infundibulum, spreading out in a fan-shaped fashion. The author has also observed that some fibres come from the posterior lobe and make their way to terminate among the epithelial cells of the anterior lobe.

In the human hypophysis the nervous network is more prominent than in the cat. In the posterior portion are also found neuroglia cells, and large cells without granules lying towards the periphery. F. GOLLA.

THE SUPERIOR OLIVE OF THE MAMMALS.

(413) **(Die obere Olive der Säugetiere.)** FRANZ HOFFMANN, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 14, S. 76.

IN a long paper, extending to two hundred and fifty pages, the author describes the anatomy of the superior olives in the different mammals. His work was purely morphological; it does not deal with the connections or functions of these masses of grey matter, but by the use of the Weigert-Pal method and various cell stains he investigated their form and structure in man and in forty-one other different animals, representing all the more important mammalian classes, except the elephant family and the monotremata.

Only the more interesting of his facts can be shortly summarised in an abstract. The form and position of the superior olives are strikingly similar in all classes of mammals; each lies ventral or ventro-lateral to the corresponding facial nerve nucleus, and the oral end usually comes to the level of the lower border of the pons. Each olive consists of a mesial and a lateral portion, but in many animals the division is not very distinct; the former is the longer, it extends further oralward, and is generally found continuous with the nucleus of the lateral fillet. The lateral portion, however, is usually larger in cross-section, and more convoluted and irregular; it is also more variable in relative size and form than the medial portion. In addition to these two compact nuclei there are generally diffuse masses of grey matter (*verschwommenes Grau*) which lie around them that also belong to the superior olives; these are relatively smaller the more highly developed the superior olives are; in the monotremata apparently they alone represent the superior olives.

There is no close parallel between the development of the superior olives and the acoustic powers of the animal, and often not even between their size and that of the corpus trapezoides.

The author has been unable to find any support for the hypothesis put forward by Bechterew and Held that the superior olives are acoustic reflex centres.

The *Olivenstiel*—the fibres that pass from the superior olive towards the nucleus of the sixth nerve—seem to belong to the striæ acusticæ. GORDON HOLMES.

COMPARATIVE ANATOMICAL STUDIES ON THE STRUCTURE (414) AND SIGNIFICANCE OF THE INFERIOR OLIVES IN MAMMALS AND BIRDS. (Vergleichend anatomische Studien über den Bau und die Bedeutung der oliva inferior der Säugetiere und Vögel.)

E. M. WILLIAMS, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 17, S. 118.

THIS paper adds nothing to our knowledge of the structure or connections of the inferior olives. The only conclusions of interest that are drawn are that the size of the olives stands in direct relation to the differentiation of the extremities, and to the development of the mechanism of equilibration.

GORDON HOLMES.

THE COMPARATIVE ANATOMY OF THE POSTERIOR CORPUS (415) QUADRIGEMINUM. (Beitrag zur vergleichenden Anatomie des hinteren Vierhügels des Menschen und einiger Säugetiere.)

Frau M. T. VALETON, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 14, S. 29.

THIS is a paper of the kind that Professor Obersteiner's pupils have made us familiar with; it contains observations made on series of normal sections stained by the Weigert-Pal method from different animals.

The structure and connections of the posterior corpus quadrigeminum are simple. Its size is directly related to that of the lateral fillet, which is its main and perhaps its only afferent tract. The lateral fillet as a rule splits into a lateral and a medial portion, the lateral being the larger, and thus surrounds the nucleus of the quadrigeminal body, but in many animals some of the fibres of the lateral division run directly into the nucleus. Finer fibres, which probably also come from the lateral fillet, form in many animals, especially in man, a zonal layer on the lateral surface of the quadrigeminal body.

Certain fillet fibres decussate in the anterior medullary velum; these belong to two distinct systems. The one, which is especially well developed in man, consists of fibres that ascend to the frenulum and either cross the middle line towards the opposite corpus quadrigeminum, or run cerebralwards on the median border of the nucleus; the second system includes fibres that ascend from the fillet either lateral or medial to the superior cerebellar peduncle and decussate in the anterior medullary velum dorsal to the decussation of the trochlear nerve, but ventral and caudal to the fibres of the first system.

The size of the brachium of the posterior corpus quadrigeminum is closely related to that of the inter-quadrigeminal commissure GORDON HOLMES.

THE COMPARATIVE ANATOMY AND PHYSIOLOGY OF THE (416) SUBSTANTIA GELATINOSA OF THE DORSAL HORNS.

(Vergleichend-anatomische und physiologische Untersuchungen über die Substantia gelatinosa des Hinterhorns.) TORATA SANO, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 17, S. 1.

THE author investigated the anatomy and histology of the substantia gelatinosa Rolandi in a large series of animals. Three groups of fibres can be distinguished in it, those of the first two groups being myelinated, while the third group contains both medullated and naked fibres: (1) dorsal root fibres which pass into it chiefly on its medial side, (2) finer fibres from Lissauer's zone, (3) a dense plexus of fibres throughout the whole of it. Three classes of nerve cells also may be recognised: small, poorly developed cells of an embryonic appearance, larger spindle-shaped elements, and polygonal cells rather similar to the smaller ventral horn cells.

Its structure he found remarkably uniform in all animals; its size always increases in the spinal enlargements and in the sacral segments and the conus. In many animals that on the tip of each dorsal horn is continuous with the central gelatinous substance, and through this with that of the opposite side. In early development these parts are continuous in all animals; they develop from the same *anlage*.

Hatschek found the substantia gelatinosa very poorly represented in the Delphinus, and as cutaneous sensibility is probably of a very low order in this animal, he assumed that there is a correlation between the acuteness of cutaneous sensibility and the relative size of the substantia gelatinosa; in fact, that the latter is probably a sensory organ. Sano has not been able to obtain any facts in support of this hypothesis, and the fact that the gelatinous substance is relatively largest in the conus terminalis is decidedly against it. Though he does not bring any strong arguments in favour of the view, he concludes that it is probably a central sympathetic organ; he disregards the fact that the substantia gelatinosa is least developed in the regions in which the sympathetic outflow is greatest—that is, in the dorsal segments.

GORDON HOLMES.

PICK'S BUNDLE, WITH AN UNUSUAL COURSE. (Ein Picksches Bündel mit ungewöhnlichem Verlauf.)

(417) R. STERN, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 14, S. 16.

THESE observations were made in a series of normal sections through the brain-stem stained by the Weigert-Pal method.

At the level of the upper portion of the pyramidal decussation there was on each side an abnormal bundle cut across in transverse sections ventro-medial to the substantia gelatinosa. On the one side the bundle when traced upwards was found to take the ordinary course of Pick's bundle, that is, it remained ventromesial to the substantia gelatinosa and ventral to the fasciculus solitarius, and could be traced in this position oralwards as far as the dorsal vestibular nucleus.

The bundle of the opposite side took a very unusual course, as when traced upwards in serial sections it was found to move dorsalwards, mesial to the dorsal column nuclei, and then having reached the dorsal surface of the medulla it turned lateralwards and ventralwards till it came to lie on the outer surface of the corpus vestiforme. In this position it could be followed as far as the upper border of the ventral cochlear nucleus. Beyond this it could not be definitely traced, but it seemed that its fibres either joined the corpus vestiforme or turned round the ventral surface of the cochlear nucleus.

As these fibres could not be traced either from their source or to their termination their nature remains doubtful. It is suggested that they more probably represented an aberrant direct cerebellar tract than aberrant pyramidal fibres, as Pick's bundle generally does.

GORDON HOLMES.

ON THE SHAPE AND SIZE OF THE CROSS-SECTION OF THE (418) SPINAL CORD. (Beitrag zur Kenntnis der Form und Grösse des Rückenmarksquerschnittes.) R. STERN, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 14, S. 329.

IN childhood the ventro-lateral columns are relatively small and the dorsal columns are flattened dorso-ventrally ;—the cross section of the cord is consequently more or less oval. Towards puberty the dorso-ventral diameter of the dorsal columns increases and the ventro-lateral columns become relatively larger ; in adult age the cross-section of the cord is therefore more circular. In old age the cord becomes more flattened owing to increase of the lateral and shrinkage of the sagittal diameter of the dorsal columns.

The examination of a large number of normal spinal cords and the careful comparison of the same segments in all would be necessary to justify these conclusions ; it cannot be said that the author has satisfied either of these conditions.

He has made similar comparative observations on a considerable number of pathological specimens. The most interesting of these is that in tabes dorsalis it is chiefly the sagittal diameter of the dorsal columns that shrinks, but, further, the tabetic cord resembles in shape that of a child of from three to nine years of age, and in measurement he found that on an average the ventro-lateral columns, in which there is no visible degeneration, and the grey matter, are scarcely larger than in the cord of a child of six years old. He therefore draws the conclusion that cords in which tabetic degeneration later sets in are from the first under-developed. He has observed this striking smallness of the whole cross-section of the cord even in the earliest stages of tabes.

GORDON HOLMES.

THE POSTERIOR SPINAL ROOTS OF MAMMALS. (Vergleichend (419) anatomische Untersuchung der hinteren Rückenmarkswurzeln der Säugetiere.) J. BAUER, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 17, S. 98.

LEVI has recently shown that in man the dorsal root fibres lose their neurolemmal sheaths and become imbedded in neuroglia, within the spinal cord in the cervical segments, outside the cord in the lumbar and sacral segments, but just as they enter the cord in the dorsal segments. Bauer has investigated this relation in other mammals ; he has found that as a rule the transition takes place extra-spinally in the cervical and lumbo-sacral enlargements, but generally within the cord in the upper cervical and in the dorsal segments.

Further, he has confirmed Levi's observation that the segments of the dorsal roots which stain so palely with the Weigert-Pal method (*Aufhellungzone*) coincides with the line between the connective tissue and the neuroglia; Levi has regarded this region as the locus minoris resistentiæ, and has ascribed to it considerable importance in the pathogenesis of tabes. Bauer has found that in all the tabetic cords he has examined in which the cervical roots were severely affected this zone lay extra-medullary. GORDON HOLMES.

(420) DEGENERATION OF SOME OF THE PROJECTION TRACTS IN A CASE OF INFANTILE CEREBRAL PARALYSIS.

(Degenerationspathologische Befunde einiger Projectionsleitungen bei einem Falle von cerebraler Kinderlähmung.)

R. NEURATH, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 17, S. 72.

IN a child with congenital anomalies of the heart and larger blood vessels a sudden attack of hemiplegia occurred at the age of eight months. The child died when two and a half years old. Patches of softening with secondary sclerosis were found in the region of each Sylvian artery, involving on one side the opercular parts of the lower frontal and the central convolutions, the supramarginal and angular gyri, the greater part of the Island of Reil, and a large part of the first temporal convolution; the disease also extended to the external capsule, the claustrum and the posterior portion of the putamen. On the opposite side the destruction was less extensive and less complete.

Both hemispheres were studied in serial Weigert-Pal sections. The chief anatomical conclusions at which the author arrived are—

(1) *The reticular cortico-caudal bundle* (stratum frontale sagittale internum) is a cortico-fugal projection system of the gyrus fornicatus, part of which passes to the internal capsule, while the rest ends in the caudate nucleus.

(2) The work of Redlich, Archambault and others has tended to show that the thalamo-cortical fibres to the occipital lobe—the cortico-petal optic radiations—run in the stratum sagittale occipitale externum, while only cortico-fugal fibres are contained in the stratum internum. Neurath's observations indicate that the latter contains also cortico-petal fibres.

(3) *Türck's bundle*—the temporo-pontine fibres—probably takes origin in the second and third temporal convolutions. The auditory radiations could be traced from the first temporal gyrus through the retro-lenticular portion of the internal capsule back to the median geniculate body.

It is of interest that though the "auditory radiations" and the first temporal convolution with the transverse gyri of Heschl were destroyed on each side, the child was not deaf. The author consequently concludes that the auditory centre is not so restricted as is generally believed; in this he agrees with Monakow, but he has neglected reference to the recent paper by Mott.

GORDON HOLMES.

PHYSIOLOGY.

ON THE CORTICAL CENTRE FOR DEVIATION OF THE HEAD (421) AND EYES. (Sul centro corticale della deviazione oculocefalica.) E. POGGIO, *Riv. di Patol. Nerv. e Ment.*, Vol. xiv., F. 5.

THE author describes a case of Jacksonian epilepsy due to cysticercus in the brain. The patient had already been treated for cysticercus affecting the eye. The patient suffered from attacks of Jacksonian epilepsy, some of which began in the last three fingers of the left hand, the others by rotation of the head and eyes. These attacks sometimes remained limited to the place of origin and sometimes affected other muscular structures, but never spread to the inferior extremity. Only the first attack was followed by transient palsy. There was no loss of consciousness. To explain the dual mode of origin of the attacks a double lesion was assumed, and this supposition was verified on operation: two cysticerci were found on the surface of the dura mater, one being at the foot of the second frontal convolution and the other a centimetre behind and a little higher than the first.

The author gives a brief review of the present state of our knowledge of the cortical representation of movements of deviation of the head and eyes.

F. GOLLA.

PSYCHOLOGY.

STUDIES ON LEFT-HANDEDNESS. (Studien über Linkshändigkeit.) (422) EWALD STIER, *Monatsschr. f. Psychiatr. u. Neur.*, Mai 1909, Bd. 25, S. 408.

STIER has undertaken a thorough examination of this question on the basis of three hundred cases of left-handedness, together with a large number of controls. In this article, the first of a series, he deals purely with the questions of definition and of the technique of investigation. The latter question he has settled by finding the frequency with which different acts are performed with the left hand by left-handed persons. He divides his tests into two groups: (1) those that indicate the presence of extreme left-handedness, such as writing, or the use of a spoon to take soup, with the left hand, and (2) those that indicate the presence of a moderate degree of left-handedness, such as dealing cards, threading a needle or throwing a ball. His preliminary remarks on the subject are well worth reading by all those interested in it.

ERNEST JONES.

PATHOLOGY.

A PRELIMINARY NOTE ON BRAIN WEIGHTS AND MEASUREMENTS IN THE INSANE.

(423) Helen G. Stewart, *Arch. of Neurol.*, Vol. iv., 1909, p. 297.

In an investigation into the relative features of the brains of one hundred and sixty-seven cases of insanity, it was found that a simultaneous occurrence of the several points indicating a low type of development coincided with a low brain weight in relation to body weight and height as compared with that of normal individuals or types of insanity not accompanied by a low type of development.

Of the one hundred and sixty-seven cases examined, 36·65 per cent. possessed brains of a markedly low type, and a further 16 per cent. showed poor development of the higher association areas.

Author's Abstract.

A DESCRIPTION OF THE BRAIN OF AN EPILEPTIC IMBECILE SHOWING EXTENSIVE HETEROTOPIA OF THE GREY MATTER.

(424) Helen G. Stewart, *Arch. of Neurol.*, Vol. iv., 1909, p. 289.

In the case of an epileptic imbecile dying in Claybury Asylum, at the age of thirty-seven years, heterotopia of the grey matter was found extending throughout the whole brain with the exception of the temporal lobe. In the latter situation microscopical investigation showed that many nerve cells were present scattered throughout the white substance. This dwindling of the cells from macroscopic to microscopic proportion suggests that extensive heterotopia of this type is allied to the condition found by other investigators in 70 to 80 per cent. of epileptic brains where the nerve cells retain many of their infantile characters and persist among the fibres of the white matter. It is further suggested that the infantile characteristics of the cortical elements in epilepsy may form a basis for the persistence of fits, since a tendency to fits on slight provocation is characteristic of the infantile nervous system.

Author's Abstract.

A CASE OF MALFORMATION OF THE LATERAL RECESS.

(425) **(Ein Fall von Missbildung des Lateralrecessus.)** K. v. Orzechowski, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 14, S. 406.

In a woman, 60 years of age, who had had definite signs of tabes dorsalis for at least twenty-five years, there developed a short time before death the signs of an intracranial tumour. In addition to the tabetic degeneration of the spinal cord certain abnormalities, which are regarded by the author as developmental malformations, were found in the central nervous system.

The chief of these was a large cyst in the right ponto-cerebellar angle, the walls of which consisted of neuroglia, containing in places myelinated fibres and nerve cells, covered by pia mater; it was attached to the pia mater on the inferior surface of the cerebellum, but it was not directly connected with any part of the central nervous system. In the portion of it apposed to the cerebellum, there was a small tumour formed of central nervous tissue. It consisted of two parts: the main mass resembled in structure the grey matter of the medulla and contained in abundance nerve cells and myelinated fibres, while the smaller portion lay in the subarachnoid space and was separated from it by pia mater except at an isthmus that joined the two. This portion contained but few nerve cells or myelinated fibres, but strands of connective tissue resembling that of the pia mater infiltrated it. The main mass of the tumour was at its edges continuous with the glial wall of the cyst, but the connective tissue of the intra-arachnoidal portion on the one side joined the pia mater of the cerebellum, on the other that covering the cyst. The vessel walls of the tumour were thickened and sclerosed, and their adventitial sheaths contained curious fuchsinophile granules. This portion of the tumour is regarded as a secondary structure that resulted from a growth of the main mass into the subarachnoid space.

The tumour and its cyst was intimately related to the choroid plexus, a part of which entered the cyst through a small canal in the tumour; the tissue of the tumour was, however, separated from the plexus by a layer of ependymal cells.

A second, smaller tumour which was independent of the cyst lay in the mesial wall of the lateral recess; it also consisted of central nervous tissue, but chiefly of myelinated fibres.

The brain-stem was normal, excepting the presence of a single sclerotic patch.

Both tumours are regarded as malformations of the wall of the lateral recess; as this is a neuro-epithelial structure, it is capable of reproducing complicated nervous tissue. The developmental error to which they were due must have occurred early in embryonic life, but at a time when the choroid plexus was already laid down. The author considers that tumours in this region usually spring from " Reste " of the lateral recess, and that their relative frequency is to be explained by the complicated development of this region.

In this case, too, there were also *true neuromata* in the pia mater of the spinal cord; they lay chiefly on its lateral surface, but also on the dorsal columns. They were small, as a rule only microscopic, and consisted of slender myelinated fibres which could be traced in serial sections from the ventral roots. They lay in the pia mater, but a few were also found in the ventral roots.

Nageotte has observed similar pial neuromata in tabes, and regarded them as aberrant regenerating root fibres, but Orzechowski is certain that this explanation cannot be adopted in his case, in which he believes that the neuromata represented developmental anomalies. GORDON HOLMES.

A TERATOMA IN THE BRAIN OF A RABBIT. (Ein Teratom (426) im Kaninchenhirn.) R. SHIMA, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 14, S. 373.

A LARGE teratoma, which had produced no symptoms during life, was found by chance in the brain of a rabbit. It lay chiefly in the position of the optic thalamus and extended from the posterior commissure almost to the frontal pole.

Its posterior portion consisted of a series of cysts partly surrounded by connective tissue and related to the pia mater at the base of the brain. Most of these were lined by squamous epithelium, which in places became cylindrical; some of its cells were ciliated. In the tissue around there was hyaline cartilage, unstriated muscle, and mucous and salivary glands. Though irregularly arranged these elements suggest a developmental relation to the larynx and pharynx.

In its anterior half, on the other hand, there were the constituents of a portion of the digestive tract, especially of the stomach.

Further, the tumour contained islets of nervous tissue in which there were small cavities lined by ependyma and large nerve cells of the spinal motor type.

The mesoderm contributed fat, connective tissue, smooth and striated muscle fibres, cartilage and bone. Part of the latter was in the process of ossification; the rest had well-developed periosteum and marrow.

Thus all three embryonal layers were represented in the tumour.

Despite its size the tumour had produced no pathological changes with brain-tissue around it. GORDON HOLMES.

THE STRUCTURE OF CEREBRAL GLIOMATA. (Beitrag zur (427) Kenntnis des Baues des Hirngliome mit Berücksichtigung der Zellformen.) TORATA SANO, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 17, S. 159.

THE author classifies the different forms of cells he found in several cerebral gliomata.

1. Normal neuroglial and ependymal cells; these include

spider cells, neuroglial nuclei with free glial fibrils, and true ependymal cells. The latter are found only in tumours with cystic spaces, such as correspond to an evagination of a ventricle.

2. Embryonic cells, which may be spindle-shaped or resemble the cells of a sarcoma.

3. Pathological neuroglial cells, either pale homogeneous inflated forms, cells in pigmentary or fatty degeneration, and ependymal- or epithelial-like cells.

As a rule all these varieties of cells may be found in any one tumour.

Corpora amylacea, which are frequently found in gliomata, may arise either by a metamorphosis of glial nuclei, or by degeneration of the cytoplasm of neuroglial cells.

GORDON HOLMES.

ON THE SPINAL ARACHNOID. (Ein Beitrag zur Kenntnis der (428) Arachnoidea spinalis.)

E. MATTAUSCHEK, *Arb. a. d. Neurol. Instit. an der Wien. Univ.*, 1908, Bd. 17, S. 150.

THIS is a short note on the condition of the spinal arachnoid at different ages and in certain pathological conditions. Calcification of the fibrous tissue may occur even in early life and apart from any local disease. A form of calcification of individual strands of the connective tissue that may occur at any age, and gives rise to slender needle-like structures that stain deeply with hæmatoxylin, is apparently described for the first time. There is an excellent description of the arachnoid *perles* that consist of epithelial cells arranged concentrically around a hyaline or calcareous core. These may arise from a primary proliferation of the epithelial cells to form whorls, the centres of which later necrose, become hyaline and eventually calcify; or it may be that a focus of hyaline degeneration of the connective tissue is the primary change and that around it the epithelial cells proliferative.

As the arachnoid contains no blood vessels it cannot take an active part in inflammatory processes. GORDON HOLMES.

CLINICAL NEUROLOGY.

DIPHTHERITIC PARALYSIS. (429)

A. H. GORDON, *Montreal Med. Journ.*, 1909, p. 237.

A RECORD of severe diphtheritic paralysis in boys, aged 7 and 5 years, following in each case a malignant initial attack. One case recovered after suffering from precocious palatal palsy, cardiac dilatation and paralysis of the pharynx and diaphragm. The writer states that there was at no time any ocular palsy, definite paralysis of the extremities or loss of knee jerks. In the fatal case, which also developed palatal, pharyngeal and diaphragmatic palsies, as well as a squint and loss of knee jerks, no microscopical changes were found in the pneumogastric or phrenic nerves, but no examination of the central nervous system was obtained.

J. D. ROLLESTON.

TWO FATAL CASES OF DIPHTHERITIC PARALYSIS. (Deux cas de paralysies diphtériques terminés par la mort.) J. COMBY, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, T. xxvii., 1909, p. 828.

(430)

IN the course of the last few years Comby has treated thirteen cases of diphtheritic paralysis with antitoxin without a death. He now records two cases in boys aged 2½ years and 4 years respectively in whom serotherapy did not avert a fatal issue. The failure of the treatment is attributed to the fact that the paralysis had been present for a fortnight before the injections were given.

J. D. ROLLESTON.

A FATAL CASE OF LATE GENERALISED DIPHTHERITIC PARALYSIS. (Paralysie diphtérique généralisée tardive suivie de mort.) SALAGER, *Montpellier méd.*, 1909, p. 258.

(431)

A RECORD of a case in a child aged 4½ years in whom the paralysis supervened a month after a sore throat, which was regarded at the time as a tonsillitis. Numerous injections of antitoxin were unsuccessful.

J. D. ROLLESTON.

A SECOND ATTACK OF GENERAL POST-DIPHTHERITIC PARALYSIS OCCURRING AFTER AN INTERVAL OF TWO YEARS. COULTER, *Journ. of Nerv. and Ment. Dis.*, June 1909, p. 351.

(432)

THE case, which the author states is unique in the literature, was that of a farmer, aged 24, who shortly after an attack of diphtheria developed paralysis with anæsthesia of glove and stocking distribution. He completely recovered, but suffered a second attack of diphtheria two years later, with subsequent motor and sensory paralysis. He again recovered.

ERNEST JONES.

CHRONIC VOCAL PARALYSIS FOLLOWING LARYNGEAL (433) DIPHTHERIA. (Un cas de paralysie vocale chronique consécutive au croup.) GAUJOUX and BRUNEL, *Montpellier méd.*, 1909, p. 257. (Soc. de Sci. méd.)

A GIRL, aged 7 years, was exhibited with paralysis of the right vocal cord, which had persisted since an attack of laryngeal diphtheria three years previously. Intubation had been performed on three occasions, but the tube had never been in the larynx longer than twenty-four hours. Injections of antitoxin had had no influence upon the paralysis. J. D. ROLLESTON.

MENINGITIS WITH CONSIDERABLE MICROBIAL INFECTION (434) WITHOUT SPINAL LEUCOCYTOSIS. (Méningite avec infection microbienne abondante sans réaction leucocytaire du liquid céphalorachidien.) A. PISSAVY and GUGGENHEIM, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, T. xxvii., 1909, p. 1224.

A MAN, aged 50, hitherto healthy, was admitted to hospital with well-marked meningeal symptoms. A perfectly clear fluid under hypertension was obtained on lumbar puncture showing complete absence of cellular elements, but a very large quantity of microorganisms. Death took place after about a fortnight's illness. No morbid changes were found at the autopsy beyond considerable congestion of the pia mater. The pathogeny of this case is obscure, the absence of spinal leucocytosis being characteristic either of very mild or of fulminating cases (*v.* this *Review*, 1909, p. 110), in neither of which the present one could be classed.

J. D. ROLLESTON.

THE SERUM TREATMENT OF 196 CASES OF EPIDEMIC (435) CEREBRO-SPINAL MENINGITIS. (La sérothérapie antiméningococcique dans 196 cas de méningite cérébro-spinale épidémique.) C. DOPTER, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, 1909, T. xxviii., p. 39.

AMONG one hundred and ninety-six cases of epidemic cerebrospinal meningitis treated with Dopter's serum in various parts of France since the beginning of the year, there were thirty-one deaths, a mortality of 15·86 per cent. On subtracting ten cases who were injected *in extremis* and two in whom death was not due to meningitis the mortality is reduced to 10·32 per cent. The serum has no beneficial effect in late cases, in septicæmic or hypertoxic forms, or in those cases in which cerebral phenomena are very marked.

J. D. ROLLESTON.

DIAGNOSIS OF MENINGOCOCCAL CEREBRO-SPINAL MENINGITIS BY THE PRECIPITO-REACTION. (Diagnostic de la méningite cérébro-spinale à méningococques par la précipito-réaction.)

(436) H. Vincent and Bellot, *Bull. de l'Acad. de méd.*, T. lxi., 1909, p. 326, and *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, T. xxvii., 1909, p. 952.

In cases of meningitis in which examination of the cerebro-spinal fluid does not reveal the meningococcus the following test is of value. The cerebro-spinal fluid is centrifugalised, and the clear supernatant fluid is poured into three tubes. To each of the first two is added a drop of anti-meningococcic serum, while the third tube serves as a control. The tubes are then hermetically sealed and placed in an incubator at 55° C. After eight hours, if the reaction is positive, a turbidity will have formed in the first two tubes, while the control tube remains clear. For the success of the test it is essential that both the serum and the cerebro-spinal fluid should be fresh and that the case should not have previously received anti-meningococcic serum. In thirty-two cases of meningococcal cerebro-spinal meningitis examined by Vincent and Bellot, the reaction was positive, while normal cerebro-spinal fluid, and fluid from cerebro-spinal meningitis not due to the meningococcus, gave a negative reaction. No relation was found to exist between the gravity of the disease and the degree of turbidity, as some fatal cases showed only a slight opalescence. The reaction is found at an early stage of the disease—*e.g.* eleven or thirteen hours after the onset—and tends to disappear by the end of the second or third week.

J. D. Rolleston.

CASE OF FATAL HÆMORRHAGE INTO THE PONS VAROLII IN A YOUNG INFANT.

(437) Sidney Phillips, M.D., *Lancet*, June 12, 1909, p. 1680.

A female infant of 14 months, previously considered a very healthy child, was put to bed, and an hour later was found unconscious with vomit all around. She was brought at once into St Mary's Hospital, London, unconscious, with complete flaccidity of muscles; pupils equal, normal in size; no reaction to light. Knee jerks present; Kernig's sign absent. Pulse, 70; respirations, 16 per minute; temperature, 96·6°; a trace of albumen in urine obtained by catheter; three slight linear bruises over left malar region, which mother had noticed on the previous day. The child continued in the same comatose state until March 29th, when she died, a period of fourteen days. During that time there was no movement of any muscle, except a slight "champing" movement of the lips and slight spasm of the left arm four days after admission. There was never optic neuritis; the knee jerks were lost after the first four days.

During the prolonged coma sudden respiratory "crises" occurred, in each of which the respirations suddenly became very rapid, rising in one attack from 16 to 42 per minute, and simultaneously the bronchial tubes became flooded with mucus, so that the condition was very like that seen in some cases of resolving pneumonia; the attacks subsided with disappearance of the moist sounds; the temperature during the coma was subnormal, except for a rise on one day to 102°; the albumen in the urine was temporary only.

The necropsy showed a softened blood clot occupying the right half of the pons in almost its whole length: it came close to the median line, but did not reach the surface of the brain at any point; there was also a collection of much more recently extravasated blood in the subdural space around the right lateral lobe of the cerebellum, and a small amount also in the subdural space at the base of the brain.

After death information was given by the mother that the child had had a sudden attack of dyspnœa seven days before the coma came on: it was severe enough to lead the mother to take the child as a "casualty" to the hospital, but soon passed off; possibly it was caused by some smaller hæmorrhage into the pons than that leading to the fatal coma, for the attack seemed similar to those the infant had while in hospital. Pons hæmorrhage so early in life is very rare: there was nothing to indicate syphilis as a cause, and the slight bruising was as likely to have been caused by a fall from some preliminary circulatory disturbance as to have been the cause of the hæmorrhage—the bruising of face was on the left side, the hæmorrhage into the pons on the right side. AUTHOR'S ABSTRACT.

NOTES AND OBSERVATIONS ON 40 CASES OF NEW GROWTH, (438) INCLUDING 18 INTRACRANIAL TUMOURS. HELEN G. STEWART, *Arch. of Neurol.*, Vol. iv., 1909, p. 247.

FROM a macroscopical and microscopical examination of eighteen intracranial tumours it was found impossible to correlate the presence of mental symptoms either with the position of the growth or with the histological changes. The method of extension of the malignant growth in the brain was found to vary; in cases of secondary invasion the line of growth was largely along the perivascular lymphatics; in glioma, on the other hand, the extension was largely due to a direct conversion of pre-existing glial tissue into tumour tissue. The method of extension of the malignant growth was also studied in tumours of other organs than the brain and an investigation made into the cell reactions and changes in and around the malignant areas. AUTHOR'S ABSTRACT.

HEMIPLEGIA IN SCARLET FEVER. (L'hémiplégie dans la Scarlatine.)

(439) A. GOUGET and P. PELISSIER, *Bull. et mém. de la Soc. méd. des Hôp. de Paris,* 1909, T. xxvii., p. 842.

A GIRL, aged 6 years, on the fourteenth day of a severe attack of scarlet fever, when the temperature had almost reached normal, was seized with convulsions, followed by complete left hemiplegia, which was still present, but without contractures, when she was seen five months later. The paralysis is attributed to thrombosis of the Sylvian artery. The writers have collected from literature sixty-nine other cases, in which the three recently reported in this *Review* (1908, p. 530) by the abstracter are not included.

J. D. ROLLESTON.

HEMIPLEGIA AS A COMPLICATION OF EPIDEMIC CEREBRO-SPINAL MENINGITIS. (Méningite cérébro-spinale épidémique compliquée d'hémiplégie.)

(440) J. CASTAIGNE and L. RIVET, *Bull. et mém. de la Soc. méd. des Hôp. de Paris,* T. xxvii., 1909, p. 900.

A MALE, aged 17 years, was admitted to hospital on the third day of disease, and was treated with intramuscular and intraspinal injections of electrargol until the twentieth day. During the next week a daily intraspinal injection of 20 c.c. of Dopter's serum was substituted. The temperature at once began to fall, but on the third day of serum treatment left hemiplegia developed, and was still present in a spastic form two months later, when the cerebro-spinal fluid showed a well-marked lymphocytosis in place of the initial polynucleosis. The hemiplegia is attributed to encephalitis of the right Rolandic area following inflammation of the meninges. The only other case of this complication of epidemic cerebro-spinal meningitis was reported by Netter in 1898 (*Sem. méd.*, p. 281).

J. D. ROLLESTON.

FIVE CASES OF EPIDEMIC INFANTILE PARALYSIS.

(441) A. HYMANSON, *Arch. of Pediat.*, May 1909, p. 364.

IN New York, summer 1907. Three of those cases had facial paralysis, alone, or with some of the limbs; one was of the type of a very rapid Landry's paralysis, and one had widespread sensory as well as motor paralysis; the former, however, soon cleared up.

J. H. HARVEY PIRIE.

ACUTE POLIOMYELITIS. (An Epidemic.) HENRY KOPLIK, *Arch. of Pediat.*, May 1909, p. 321.
(442)

THIS is a short account of the summer 1908 epidemic in New York, of over twelve hundred cases. Local weather and hygienic conditions seemed to play little part in the distribution. Children of all ages were affected and a few adults. The classical type of poliomyelitis was by no means general. The author makes three main divisions of the cases—first, cerebral cases with marked stupor and bulbar symptoms; second, neuritic cases with acute pains in the extremities and joints, many being possibly purely neuritic; third, those following the classical type we are accustomed to sporadically. What was especially astonishing in the epidemic was the rapid atrophy of muscle in those cases where the paralysis was permanent, the quick development of E.R.D., and even more startling the contractures which occurred, following rapidly on the atrophy. The tonsils and gut seemed to be the points of entry for the infectious agent. J. H. HARVEY PIRIE.

EARLY SYMPTOMS IN SIXTY-THREE CASES OF THE RECENT EPIDEMIC OF ANTERIOR POLIOMYELITIS. L. E. LA FÉTRA, *Arch. of Pediat.*, May 1909, p. 328.
(443)

CONDITIONS preceding the onset—very variable. Vomiting in 25 cases; constipation, 14; diarrhœa, 17, severe; sore throat, 6. Fever noted in 52, probably present in all. Restlessness and irritability noted in 37; delirium, 2; convulsions in 4; rigidity of neck in 11 cases; tendon reflexes not studied before onset of paralysis; apathy in 10 cases, stupor in 4; headache in 10; photophobia in 3; pain and tenderness in the affected limbs in 32 cases; along the peripheral nerves in 2; in the muscles in 5, and on movement of the joints in 4.

Paralysis flaccid in 58; spastic or rigid in 5. Lumbar puncture negative for organisms, a few mononuclear cells found only once. Blood, moderate leucocytosis. J. H. HARVEY PIRIE.

TRANSMISSION OF POLIOMYELITIS ACUTA TO MONKEYS. (Uebertragung der Poliomyelitis acuta auf Affen.) K. LANDSTEINER u. E. POPPER, *Ztschr. f. Immunitätsfor.*, Originale, Bd. 2, No. 4, S. 377.
(444)

CORD substance from a boy dying in the acute stage of poliomyelitis, and in whom all bacteriological findings were negative, was ground up with sterile salt solution and injected intraperitoneally into rabbits, guinea-pigs, mice and monkeys (two, of different species).

The three former were unaffected, but both monkeys died after a period of paralysis and their cords showed the characteristic appearances of poliomyelitis acuta—other organs being normal. No organisms were found. An attempt to similarly transmit the disease to a second generation of monkeys failed.

J. H. HARVEY PIRIE.

EPILEPSY IN SECONDARY SYPHILIS. (**Epilepsie syphilitique**
(445) **secondaire.**) L. GUÉNOT, *Gaz. des Hôp.*, No. 65, 1909, p. 823.

WHILE epilepsy of a Jacksonian type is relatively frequent in tertiary syphilis, epilepsy in the secondary period is very rare, and differs from the former in its pathogeny, symptoms and prognosis. A man, aged 26, whose chancre had appeared two and a half months ago, was admitted to hospital with typical secondary syphilis of a fortnight's duration. Prior to admission he had had three convulsive attacks, preceded by an aura and accompanied by loss of consciousness, and on the first occasion by incontinence of urine. The first attack occurred within a month of the appearance of the chancre. There was no family nor personal neuropathic history. His cerebro-spinal fluid showed a slight lymphocytosis and a positive Wassermann's reaction. Mercury and potassium iodide were exhibited, and no further convulsions took place, though he was conscious of an aura several times, on each occasion of diminishing severity. J. D. ROLLESTON.

TRAUMATIC HYSTERIA FOLLOWING WOUNDS IN THE HEAD.
(446) C. W. BURR, *Journ. of Nerv. and Ment. Dis.*, June 1909, p. 368.

THE patient, a man of 33, had been shot through the head nine years ago. He was unconscious for seven days, and shortly after began to suffer from epileptic fits. Last year he fractured his skull and developed a right-sided hemiplegia. The author considers that both the fits and paralysis are hysterical.

ERNEST JONES.

DISTURBANCES OF ATTENTION IN HYSTERIA. (**Aufmerk-**
(447) **samkeitsstörungen bei Hysterie.**) DÖBLIN, *Arch f. Psychiatr u. Nervenkrankh.*, Bd. 45, Ht. 2, S. 464.

DÖBLIN here describes a case of hysteria to which he subjoins some general considerations on the subject of attention. The symptoms he chiefly studies were, on the one hand, a very pronounced absentmindedness and diminution of attention, and on the other, a curious vividness and persistence of some impressions which would take possession of the patient's consciousness to the exclusion of all else. The impressions referred to were auditory,—the last word of every sentence she heard lingering for hours,—and visual, in the shape of various hallucinations.

Döblin develops Breuer and Wernicke's notion of psychical energy, treating of attention as an active process, and describes the above-mentioned symptoms as a psychical ataxy. To express this he coins the term "dysergasia." ERNEST JONES.

ON THE PATHOGENESIS OF THE NERVOUS DISTURBANCES (448) OF SECRETION OF THE STOMACH. BICKEL, *Deut. Med. Wchnschr.*, April 22, 1909, S. 704.

THE writer of this paper, as the result of experimental work, comes to the conclusion that the gastric parenchyma (by which term he understands the secreting cells, together with the minute branches of the sympathetic system among them) is excited to activity by the chemical substances circulating in the blood.

His method of experimentation was to produce a "nerveless" stomach by making from the fundus of the stomach in a dog a closed sac which had no connection with the rest of the organ beyond that given by two or three arteries and veins, dissected quite bare. This "nerveless" stomach continues to secrete juice of normal composition, but after subcutaneous injection of Liebig's extract, or panopepton, an excessive secretion appears. Similarly after placing food in the larger part of the stomach an interval of ten to fifteen minutes elapses and then secretion appears, in the sac (this time for the "nerveless" stomach being somewhat longer than that required in Pawlow's experiment). The writer found that salt was certainly not the exciting factor, and concludes by the suggestion that in nervous disorders of the stomach the proper treatment consists in the regulation of the secretion by suitable diet. JOHN D. COMRIE.

ANGIONEUROTIC ŒDEMA, WITH REPORT OF A CASE. S. (449) SEILIKOVITCH, *Arch. of Pediat.*, May 1909, p. 377.

A FATAL case in a child a few weeks old. Circumscribed œdematous swellings appeared, first on the genitals, then on the face, then on both arms, then lastly on the labia. The child died in a convulsion. No post-mortem was obtained. J. H. HARVEY PIRIE.

PAGET'S DISEASE WITH ADDISONISM AND VARIOUS OTHER (450) GLANDULAR DISTURBANCES. (Maladie de Paget avec signes addisoniens et divers autres troubles glandulaires.)

P. Dalché and J. Galup, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, Tom. xxvii., 1909, p. 1218.

The patient was a man, aged 53, with signs of testicular thyroid and suprarenal insufficiency. The pathogeny of Paget's disease is discussed, especially in its relation to the doctrine of polyglandular syndromes. J. D. Rolleston.

THE SENSORY SYSTEM OF THE FACIAL NERVE AND ITS (451) SYMPTOMATOLOGY.

Ramsay Hunt, *Journ. of Nerv. and Ment. Dis.*, June 1909, p. 321.

This is an excellent general review of a subject for researches on which the author is renowned. After giving a historical resumé, he deals with the anatomical considerations bearing on the sensory system of the seventh nerve and the clinical syndromes that arise from affections of this system. Amongst the latter are herpetic inflammations of the geniculate ganglion, neuralgia of the seventh nerve, and pain and sensory disturbances in facial neuritis.

An author's abstract of this paper will be given in next number. Ernest Jones.

PSYCHIATRY

KERNIG'S SIGN IN MENTAL DISEASES. (Il Sintomo di Kernig (452) nelle malattie mentali.)

M. Sciuti, *Ann. di Nevrolog.*, Anno 27, p. 43, F. 2.

Three methods of investigation were adopted. In the first the patient, lying on his back, is asked to sit up, keeping his legs extended. When the symptom is present and the body is raised, the knee flexes, forming an obtuse angle.

It is better to raise the body whilst the patient remains passive, and with a hand on the knee to evaluate the force impelling it to bend. A second method, not to be recommended, consists in making the patient sit at the end of a chair so that his trunk is at right angles to the thighs, and then attempting to extend the legs and noting the resistance. The third method is to attempt to straighten the knee-joint when the patient is lying on his back and the hip-joint has been fully flexed. This was found to be the best method. When the lower leg forms an angle of less than 140° with the thigh, the author considers Kernig's sign to be present.

An exhaustive examination of various forms of mental disease leads him to the conclusion that the sign of Kernig is not necessarily associated with any mental disease, but may be present in such cases of dementia paralytica as present symptoms of general hypertonicity. F. GOLLA.

AMAUROTIC FAMILY IDIOCY. (Ueber die Anatomie und Klinik (453) der Tay-Sachsschen amaurotisch-familiären Idiotie mit Rücksicht auf verwandte Formen.) SCHAFFER, *Zeitschr. f. d. Erforsch. d. jugend. Schwachsinns*, Bd. 3, H. 1, and Bd. 3, H. 2, 1909.

THIS is a very long and careful piece of work. Into the pathology of the condition the author enters very fully and minutely, illustrating his remarks by numerous photographs and diagrams derived from observation of eight cases of the condition. He likewise discusses at some length the clinical characteristics of this and related conditions, and also gives a comprehensive summary of literature on the subject. A. DINGWALL FORDYCE.

THE CLINICAL SIGNIFICANCE OF DELUSIONS OF PHYSICAL (454) PERSECUTION. (Über die klinische Bedeutung des physikalischen Verfolgungswahn.) HERMANN, *Allg. Zeitschr. f. Psychiatr.*, Bd. 66, Ht. 2, S. 261.

THIS is a valuable contribution to the Kraepelinian conception of dementia præcox. Hermann finds these delusions present in 30 per cent. of his cases of dementia præcox, and in 4 per cent. they dominate the picture. He relates eighteen cases. He agrees with Kraepelin that the presence of such delusions is pathognomonic in the differentiation between paranoia and paranoid dementia, and regards them as the expression in the psycho-sensory sphere of the characteristic katatonic (sejunctive) disturbances of will.

ERNEST JONES.

THE PSYCHOPATHOLOGIC AND CLINICAL STATUS OF THE (455) *ZWANG* CONDITIONS. (Zur Psychopathologie und klinischen Stellung der Zwangszustände.) SKLIAR, *Allg. Zeitschr. f. Psychiatr.*, Bd. 66, Ht. 2, S. 278.

IN this article of fifty-four pages Skliar first describes five cases, and then gives a general discussion of the subject. The article is chiefly conspicuous for a grotesque misunderstanding of Freud's fundamental researches on the subject. Skliar would quite separate the *Zwang* states from the phobias. He considers them a primary affect disturbance, and not an intellectual or will defect. He accepts Westphal's definition of the conditions, recognises in them a unitary disease form, and subdivides them into three: (*a*) those in which principally *Zwang* actions and inhibitions occur, (*b*) those in which the *Zwang* manifestations chiefly concern the sphere of thought, *folie de doute*, onomatomania, etc., and (*c*) those in which chiefly *Zwang* effects occur. ERNEST JONES.

THE LUES-PARALYSIS QUESTION. (**Die Lues-Paralyse-Frage.**)
(456) PLAUT and OSKAR FISCHER, *Allg. Zeitschr. f. Psychiatr.*, Bd. 66, Ht. 2, S. 340.

WE have here two reports, seventy-five pages long, read before the Deutscher Verein für Psychiatrie by Plaut and Fischer respectively. They are both of extraordinary interest and importance, perhaps even more for the clear discussion and definition of the various questions at issue than for the actual conclusions reached. Among Plaut's conclusions are the following:—

1. There exists no general paralysis without previous syphilis.
2. It is not improbable the actual virus is still present during the course of the disease, so that general paralytics harbour the spirochæte.
3. There is no satisfactory evidence for the idea of a *syphilis à virus nerveux.*
4. The fact that the syphilitic infection is almost constantly a mild one in cases of paralysis leads one to suppose that the latter disease is from the first determined by some abnormal defensive mechanism.
5. A special brain predisposition to the disease is unlikely; the rôle of heredity is quite uncertain.
6. Exogenous agents (alcohol, trauma, etc.) play no essential part.
7. It is probable that the disease is preceded by chronic syphilitic processes, which prepare the development of paralysis.

Fischer concludes:—

1. A characteristic histological picture occurs in paralysis, but the diagnosis should be made not from single changes in the cortex but from the whole.
2. The histo-pathological process is an affection of the parenchyma, combined with chronic inflammation; the two are independent of each other.
3. The histopathology of the disease must serve as the basis for the clinical differentiation of it.

4. From a clinical standpoint four types may be recognised:

(*a*) The classical type.

(*b*) Lissauer's type, with focal lesions—cortical, cerebellar or thalamic.

(*c*) Atypical paralysis; catatonic, senile, *foudroyant*, and tabes psychosis.

(*d*) Stationary paralysis.

5. General paralysis cannot at present, from an anatomical standpoint, be regarded as a *direct* syphilitic process.

ERNEST JONES.

TREATMENT.

THE USE OF SODIUM AND IRON FORMATES IN MENTAL (457) AND NERVOUS DISEASES. (Il Formiato di sodio e di ferro negli ammalati di mente e di sistema nervosa.)

G. BERTOLDI, *Ann. di Nevrolog.*, Anno 27, F. 2.

AN exhaustive analysis of the action of the formates in a number of cases accompanied by estimation of their effects on the metabolic exchange lead the author to confirm the claims made for formic salts by Huchard and others.

He finds by dynamometer experiments that the increase in muscular tone and resistance to fatigue is indubitable. He does not, however, agree with Huchard that the onset of fatigue is retarded by the formates producing an anæsthesia of the muscle nerves, but considers that a direct neutralisation of fatigue products results. The diuretic action of the formates was found to be well marked.

In all cases administration of formates was followed by an increase in the hæmoglobin index and in the number of red corpuscles.

There was some evidence that the gastric and intestinal functions were improved by formate administration. The psychical amelioration can only be ascribed to the improved general health, etc.

F. GOLLA.

ACCIDENTS FOLLOWING THE USE OF ANTI-MENINGOCOCCIC (458) SERUM. ANAPHYLAXIS. RISE OF TEMPERATURE ALONE IS NOT AN INDICATION FOR FURTHER INJECTIONS. (Des accidents consécutifs à l'emploi du sérum antiméningococcique. Anaphylaxis. Les élevations de la témpérature ne sauraient à elles seules suffire pour faire poursuivre les injections.)

A. NETTER, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, Tom. xxvii., 1909, p. 1013.

URTICARIA appearing about ten days after the injection of antimeningococcic serum and preceded or accompanied by pyrexia and pains in the joints and limbs occurred in about one-third of Netter's patients, but he had met with only one case of anaphylaxis. The patient was his own son, who had been injected with antitoxin for an attack of diphtheria in 1901. Three years later he had shown the phenomena of anaphylaxis after a prophylactic injection of diphtheria antitoxin. The symptoms soon yielded to calcium chloride. In 1909 the boy fell ill with cerebro-spinal meningitis, for which he received an intraspinous injection of 30 c.c. of Flexner's serum. The same dose was repeated on the two following days. Three-quarters of an hour after the first injection the face became enormously swollen, and the child complaïned of malaise and nausea, but the dyspnœa was less than in 1906. Calcium chloride was again given with satisfactory results. After the third injection there was an apyrexial interval of three days, and then the temperature rose again and pain in the back and limbs returned, together with an increase in nuchal rigidity and exaggeration of Kernig's sign. No further injections were given, as Netter was convinced that these symptoms were the prodromes of serum phenomena. The subsequent eruption of urticaria of three days' duration justified his abstention. Recovery was henceforward uneventful. J. D. Rolleston.

ON THE SERUM THERAPY OF CHOREA MINOR. Mayr, *Wien. Med. Wchnschr.*, June 5, 1909, S. 1290.
(459)

The writer records six cases of chorea which he treated by means of Aaronson's polyvalent antistreptococcal serum. The result was varied; in two cases recovery in six months and ten weeks respectively; in two cases the patients seemed to be worse; in the remaining two they were distinctly improved.

Five of the cases developed abscesses, but the writer decides that in severe cases likely to lead quickly to exhaustion and collapse, the use of the serum should be tried. John D. Comrie.

SURGICAL TREATMENT OF LOCOMOTOR ATAXIA. Denslow, *Ann. of Surg.*, June 1909, p. 737.
(460)

The author believes that locomotor ataxia is brought about by an exhaustion of the nerve centres due to continuous sensory impulses conveyed from some point to the sensory roots. These impulses arise chiefly from the urethra, but also from the bladder and rectum. Seventeen cases are recorded in which erosions and contractions of the urethra were treated with the aid of a urethroscope. All the cases showed marked improvement, and in one case the Argyll-Robertson pupil was cured. Henry J. Dunbar.

A CASE OF FACIAL PALSY TREATED BY FACIO-HYPOGLOSSAL ANASTOMOSIS, IN WHICH AN ANASTOMOSIS WAS ALSO MADE BETWEEN THE SPINAL ACCESSORY AND THE DISTAL SEGMENT OF THE DIVIDED HYPOGLOSSAL NERVE IN ORDER TO PREVENT PERMANENT LINGUAL PARALYSIS AND ATROPHY.

(461) BALLANCE, *Lancet*, June 12, 1909, p. 1675.

A WOMAN, aged 25 years, when seen first in January 1906, after six operations for middle-ear disease, was found to be suffering from a foul discharge from the left ear with complete left facial palsy, some ataxia of the left side, and paralysis of the left external rectus. The radical mastoid operation was carried out. In July 1906 the facio-hypoglossal anastomosis was performed. A strip, two inches long, was split up from the spinal accessory, and the free end of this strip was united to the distal end of the divided hypoglossal. Six weeks later the trapezius, sternomastoid, and tongue on the left side were atrophied; but when the patient was seen again after twenty months, the nutritional and functional recovery of the facial, lingual, and cervical muscles was complete. Movements of the face due to emotional stimuli were symmetrical and perfect, and the movements of the face and tongue were dissociated. Jerking of the shoulder, however, was accompanied by a wave of muscular contraction on the left side of the tongue. The author is convinced of the necessity of dividing the whole nerve in these cases, and has completely abandoned partial or end to side unions.

HENRY J. DUNBAR.

Reviews

TRAUMATIC NEUROSES AND THE ACCIDENT LAWS. (Die traumatischen Neurosen und die Unfallgesetzgebung.)

EWALD, *Beiheft zur Med. Klinik*, 1908, H. 12. Urban & Schwarzenberg, Wien. M. 1.

THIS thoughtful monograph deals with the psychology of German workmen claiming compensation for accidents. It appears that there are now in Germany an "immense number of nervous workmen, lacking in energy, in whom the thought of compensation has become a fixed idea." Whilst we are beginning to recognise that this obsession is not confined to Germany, it is obvious that in a country where twenty millions of inhabitants are affected by the compensation laws, much more experience of the effect of these laws upon the working classes is to be gained than we can have in Britain.

Judging from the perusal of Ewald's paper, and other foreign papers on this interesting subject, it is apparent that in Germany exaggerated claims and simulation have been long an object of anxious consideration. The conviction seems to be universal that either the German laws or their administration imperatively demand an alteration. Although traumatic neuroses existed before the compensation laws, their recent increase and the unsatisfactory prognoses given in cases where compensation is in question (contrasted with the favourable prognoses where there is none) show that compensation has, in fact, a causal connection. German experience seems to correspond with our own, that the slightest peripheral accident may occasionally cause a neurosis, whilst the victim of even severe brain concussion may escape.

The fact that the German courts recognise that predisposing causes do, in fact, influence traumatism, and that the effect on the nervous system must bear some proportion to the nature of the accident, has given an impetus to the study of questions such as whether trauma is merely the exciting factor of pre-existing conditions, or latent neuroses, and whether somatic changes in the circulatory apparatus and deep psychical changes do or do not take place in the various nervous conditions following accidents.

It is pointed out that we are, in fact, ignorant of changes which arise from nervous shock, and there is no doubt that anatomically they are unrecognisable. The old theory that small hæmorrhages occur in the brain and cord is not tenable, but the statement is made that there must be a material foundation, since certain symptoms are beyond the will power.

It is common ground both in this country and in Germany that the repeated examinations and rehearsal of the details of the accident have to some extent the same effect as the repetition of the shock of the accident, though, of course, in a much milder form. Every remembrance brings further injury to the nervous system, causing a " summation of excitements which has a prolonged effect and finds its expression in neurosis." Auto-suggestion, or what in this country has been called medico-legal suggestion, comes into play.

The opinion is expressed that the effect of the shock, and the changes in the vaso-motor system, are the basis of all traumatic neuroses, and that the accompanying psychological changes are the reason why every case has a colour of its own. And it is not difficult to see that the anxious hypochondriac, aroused by the occurrence of an accident, allows morbid ideas to obsess him. He sees, for instance, how much attention is being paid to him and his accident by those around him and by his employer, and to simple men of this class the idea conveyed is that the accident is something quite extraordinary. The experience of German surgeons coincides with that of surgeons in this country. The article points out that idleness after an accident is the worst possible thing, encourages litigants to dwell on the prospect of compensation, and produces a condition in which the injured man eventually does not care to be cured—indeed, in time he looks upon any attempt to cure him as a wrong!

Human nature is, of course, the same everywhere, and it is interesting to note that the Teuton has the objection we know so well to starting work after being laid aside for a time. It is very human to wish to avoid work. Is it always easy to go back to work even after a holiday?

The question of settling how much is due to exaggeration and how much is true neuroses is one the difficulty of which only those who are constantly in touch with nervous diseases and claims for damages can fully appreciate.

The author wisely points out that unbalanced people must be treated from the human side, especially if they are not swindlers, but people seeking merely to protect their interests by such means and knowledge as they possess. R. J. COLLIE.

THE PSYCHOLOGY OF THE CHILD AND EXPERIMENTAL PEDAGOGY. (Psychologie de l'Enfant et Pédagogie expérimentale.) E. CLAPARÈDE. 2nd Ed. Geneva: Librairie Kündig, 1909.

THE fact that a second edition of Professor Claparède's work on the psychology of the child, which first appeared in book form in the end of 1905, has been called for so soon shows the increasing interest which is being taken in the science of pedagogy. The account of memory which was contained in the first edition has been omitted, and an entirely new chapter, some one hundred and thirty pages in length, on mental development has been added. A short résumé of the literature is appended to each chapter.

The book is a very valuable introduction to the comparatively new science of child psychology, and as such is of special interest to teachers. An excellent account is given of the experimental work already accomplished in this region, and the lines of future research clearly laid down. More attention than is usual in psycho-physiological works is paid to the factor of interest, and its relation to fatigue is discussed in a very suggestive way.

MARGARET DRUMMOND.

BOOKS AND PAMPHLETS RECEIVED.

Journ. Med. Research, Boston, June 1909.

Maryland Med. Journ., June 1909.

Oppenheim and Krause. "Beiträge zur Neuro-Chirurgie. Über zwei operativ geheilte Fälle von Geschwülsten am Halsmark." Lehmann, München, 1909.

Oppenheim. "Musik und Nervosität, Nervosität und Musik." Carl Marschner, Berlin, 1909.

Annual Report of the King Edward VII. Sanatorium, Midhurst.

Th. Ziehen. "Die Erkennung des Schwachsinns im Kindcsalter.' Karger, Berlin, 1909. M. —60.

Candler. "Case of Malignant Jaundice occurring during the Course of Graves' Disease and associated with Gangrenous Tonsils" (*Proc. Roy. Soc. of Med.*, December 1908).

Mott and Halliburton. "Localisation of Function in the Lemur's Brain" (*Proc. Roy. Soc.*, B. Vol. 80, 1908).

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Review
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Original Articles

THE PATHOLOGY OF DYSCHIRIA.

PART II.

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III. NATURE OF DYSCHIRIA.

A CLEARER view of the problems at issue will be obtained by first considering the nature of the defects that characterise dyschiric manifestations: general considerations on the psychological significance of them, the mechanism whereby they are produced, and the relation of the individual members of the group to one another will be reserved for a succeeding section. It is of advantage to discuss the three conditions *seriatim*, and to begin with most advanced stage, that of achiria.

(1) *Nature of Achiria.*

Only one case of achiria has previously been described, that of Janet's, and he is the only writer who has discussed the pathogenesis of the condition. His view is summed up in the categorical statement (19) that—" En un mot l'allochirie simple (the term with which he designates achiria) est un trouble de localisation qui résulte d'un certain degré d'hypoesthésie, elle disparait ou se transforme si le sensibilité diminue ou si elle augmente."

Now each of these three statements seem to me to be decisively contradicted by the observations above detailed. Taking first the assertion that achiria is due to hypoæsthesia, we saw that in the achiric stage of Case A tests carried out with the most sedulous care failed to reveal any defect whatever in sensorial acuity, and that the patient could obtain all possible information about a stimulus except the one matter of the side on which it was applied. This fact clearly demonstrates that achiria is independent of any sensory deficiency, whether of a central or peripheral nature. That sensory defects may also be present in a given case, as they were in Janet's, is, of course, comprehensible, having regard to the hysterical nature of the condition, but their presence is certainly not essential for the existence of the symptom.

Then, with regard to the statement concerning the disappearance or transformation of achiria when the sensibility becomes less or more acute. The lack of correspondence between the intensity of the defect in the feeling of sidedness—and thus the variety of dyschiria present—and the changing state of sensibility was emphasised in the account of Case B (see section III. of the Course of the Case).

Similarly with regard to the first assertion. In no ordinary sense of the term can achiria be called a "localisation trouble," when the patient can localise a stimulus with absolute precision, apart from determination of the side on which it is applied. Never in the hypoæsthesia or alloæsthesia of organic disease do we find a perfect ability to localise the part touched combined with a total loss of the feeling of sidedness.

This sharp contrast between the complete failure of the sensation to give rise to any feeling of sidedness and its capacity to give information about all other attributes of the stimulus, its exact site, quality, etc., is most striking. The amazing specificity about this particular loss irresistibly reminds one of the other elective losses that are so characteristic of hysteria. The highly specialised nature of the defects often met with in this affection, such as a systematised amnesia for a single series of events, is such a well-known feature of the disease that it need not here be dwelt on.

Further, the patient's failure to appreciate the feeling of sidedness need not be general, but may be localised to certain mental processes. In Case A the right arm might be achiric at a time when the right leg was not, so that a stimulus applied to the former limb did not arouse the feeling of right-sidedness while one applied to the latter did. The condition might, from the standpoint of memory, be regarded as a complete antero-retrograde amnesia of a localised form.

We may *sum up* the argument so far by saying that the essential feature of achiria is an amnesic failure to associate a given feeling of sidedness with mental processes, concerning different bodily members, that normally are associated with it; a failure of such a kind that the presence of these processes in consciousness fails to arouse the feeling in question.

(2) *Nature of Allochiria.*

Four hypotheses of allochiria have previously been offered. I have dwelt fully elsewhere (32) with all except Janet's, and so may here confine myself to this one after briefly enumerating the others.

The first hypothesis, devised independently in 1880 by Fischer (6), and in 1883 by Hammond (8), and usually styled "Hammond's theory," is apparently still the currently accepted explanation of allochiria, as may be seen by a reference to "Nothnagel's Spec. Path. u. Ther." (36) or to the numerous other authorities I have elsewhere cited (31). According to this hypothesis an obstruction in the afferent path causes a passage of impulses to the contralateral side, and the cerebral hemisphere they reach refers them to the side opposite to that of their origin. This conception has usually been confined to organic cases, though Weiss (42) in 1891 extended it to the hysterical cases by speaking of a functional block in the posterior columns, a view concerning which comment is superfluous at the present day. One of the many objections to this physiologically impossible hypothesis is the fact that allochiria has never been known to occur in the Brown-Séquard syndrome, even in those cases of this nature that have been examined with extraordinary care—as by Spearman (41), Head and Thompson (11), etc., although the supporters of the hypothesis expressly maintain that the symptom should invariably occur in this condition.

The second hypothesis, emitted by Bosc (3) in 1892 postulated for the hysterical cases "an altered dynamic state of the cerebral hemisphere concerned, of such a nature that the impulses reaching it crossed through the corpus callosum to the opposite hemisphere, which therefore become endowed with the dynamic state of both hemispheres." This hypothesis is a typical instance of the common assumption that translation of the psychological facts of hysteria into physiological language furthers our comprehension of those facts, and illustrates well the fruitlessness of the metaphysiology thus erected.

The third hypothesis, an amplification made in 1905 by Spearman (39) of a suggestion offered in 1893 by Head (9), is to the effect that, in certain cases of erroneous localisation, the mental images aroused by peripheral excitation are too faint to give adequate information about the site of the stimulus when these excitations, particularly those of the "articular" group, are diminished in intensity. Spearman (40) extends this explanation to the hysterical cases by postulating a hypothetical functional affection of the cortex, which impairs the incoming articular impulses. It is evident, however, from the writings of these two authors, that they are really discussing the question of alloæsthesia under the incorrect title of allochiria, neither having recognised the fundamental distinction between the two conditions. If Spearman were correct in attributing allochiria to a defect of articular excitations, we ought in allochiric cases to find the other manifestations—inco-ordination, etc.—that he has described as being characteristic of that defect: this is not the case.

In the fourth hypothesis, that of Janet's (20), both the nature and the mechanism of production of the phenomenon are fully discussed; we are concerned at present with only the former question. Shortly put, Janet holds that normally a stimulus evokes at least two images, that of the point stimulated and that of the corresponding point on the contralateral side; and that, for a reason we shall presently discuss, allochiria consists in the undue prominence of the latter image, and a suppression of the former, brought about by hypoæsthesia, of either mental or organic origin. The last-mentioned feature is a cardinal basis of the hypothesis. He sums up by saying (24): "Il reste vraisemblable que l'allochirie même complète (allochiria) résulte comme l'allochirie simple (achiria) de l'hypoesthésie. C'est la diminution de la sensibilité consciente qui, après avoir supprimé la distinction délicate des signes locaux symétriques a amené la confusion et l'association de ces signes," and further (25), that "il faut à mon avis la rechercher chez les malades qui pour une raison on pour une autre ont presenté pendant assez longtemps un degré assez accentué d'hypoesthésie et non d'anesthésie complète," and that "les détails de cette observation ont montré que l'allochirie dépendait d'une anesthésie plus ou moins profonde, quelle qu'en soit l'origine." It follows from this view that, according to Janet, who did not distinguish between alloæsthesia and allochiria, or recognise the essentially hysteric nature of the latter condition, allochiria may arise from any affection of the nervous system, either functional or organic, provided that the requisite degree of hypoæsthesia is present. He implies this throughout, and in the case of achiria definitely commits himself to this opinion (19).

We thus see that previous writers have been unanimous in the opinion that allochiria is the result of a faulty perception of incoming sensory impressions, this being due either to an organic defect in the physiological processes that are concerned with the genesis of such impressions, or to failure on the part of the mind properly to appreciate them when they are in themselves normal. In contradistinction from this universally accepted opinion, I venture to maintain, in the light of the above detailed observations, that allochiria is totally independent of any defect in the perception of incoming impressions, but is, on the contrary, the result of an erroneous association of certain groups of memory processes. In Case A it was described how typical allochiria was present at a time when the sensibility was exactly as acute on the affected as on the unaffected side, and was, so far as the most rigorous tests could determine, of normal acuteness. The complete lack of correlation between the dyschiric manifestations and the varying defects in sensibility in Case B is equally unequivocal in this respect.

I would here call special attention to the fact that in previous discussions on the pathology of allochiria, interest has been focussed on the sensory phenomena to the exclusion of the motor and mental. These yield more important clues than the former, and show clearly the essential part played in the process by the feeling of sidedness, which I have termed "chirognostic" feeling (30). Victor Henri indeed went so far as to suggest (12) that allochiria might be dependent on a primary movement defect. There is, however, no evidence in support of this view, though it has perhaps this of truth in it, that the chirognostic feeling of a member may normally be associated more with the subject's memory of its motor functions than with his memory of its sensibilities.

The subject must therefore be viewed from a broader standpoint than that of sensibility alone, and we thus see that in allochiria certain stimuli, whether perceptions or conceptions, arouse a body of memories together with a feeling of sidedness that normally is not associated with them. For example, in Case A, drawing the patient's attention to his right arm, whether by asking him to use it or by stimulating the limb directly, aroused together with the memories of this limb—its functions, etc.—the feeling of left-sidedness instead of the normal one of right-sidedness. It is to be remarked that the reverse mechanism never obtained, that is to say, that recalling the feeling of left-sidedness never aroused the memories concerned with the right limb.

To sum up, the essential feature in the nature of allochiria is the presence of an abnormal association between a given feeling of sidedness and the memories of a contralateral part, of such a kind that any recalling of the latter simultaneously arouses the former in consciousness.

(3) *Nature of Synchiria.*

Two cases only of synchiria have been previously recorded, by Ferrier (5) and Janet (18). Janet's explanation, the only one so far offered, is an extension of his image hypothesis, that will be considered presently in connection with the pathogenesis of allochiria. He says, further (24), that "la synchirie, lorsqu'elle est consciente, exige une sensibilité plus délicate que l'allochirie simple."

Here again I would maintain that, as synchiria synchronised in Case A with an absolutely normal sensorial acuity, no defects of sensibility are necessary for the production of it, so that an explanation must be sought elsewhere.

After the preceding remarks on allochiria, it will suffice here to state that the essential feature in the nature of synchiria is the presence of an abnormal association between the memory processes relating to a given part and the feelings of right- and left-sidedness, of such a kind that any recalling of the former simultaneously arouses both the latter in consciousness.

IV. PATHOGENESIS OF DYSCHIRIA.

Again it will be convenient to discuss the individual *seriatim*, and afterwards to review the group as a whole.

(1) *Achiria.*

We start from the position that this state consists essentially in an amnesic failure to associate a given feeling of sidedness with certain mental processes that normally are associated with it. As was hinted at above, whenever we meet with a unique and highly specialised mental loss, of the peculiar nature above described, we shall be right in suspecting the presence of hysteria. Therefore on inquiring further as to the precise nature of this specific inability on the part of the conscious mind to apprehend the given feeling of sidedness, we at once reach the warmly contested field of the pathogenesis of hysteric symptoms. It is no part of my purpose here to enter into that tourney, and I shall content myself with pointing out the resemblances of the achiric losses to other hysteric losses. That the defect is what Janet (14) has termed a psychological disaggregation, or what perhaps might preferably be styled a failure in psychical assimilation, is abundantly shown throughout the present study; when, for instance, the achiria was partial, and limited for example to the right arm, the patient could conceive of the feeling of right-sidedness in connection with the right leg, but could not associate it with the feeling of the right arm, even when this was stimulated. Further, that the failure was caused by a repressed feeling-complex, of the type that Freud (7) has shown to be characteristic of hysteric symptoms, was clearly to be demonstrated in Case A, the full psycho-analysis of which I hope later to publish, together with a discussion of the mechanism whereby these complexes brought about achiria.

The only other question that will here be considered is the relation of achiria to the other amnesias that were present in connection with the parts of the body. In order to do this a few preliminary remarks are necessary about the mental processes that concern any given part of the body. These are sharply divided into two groups. First, there are the æsthesic sensibilities that depend on the excitations flowing in from the bodily member *at any given moment*; they are subdivided into (*a*) the sets of common sensibilities (touch, pain, heat, cold, etc.) that have to do with the immediate relation of the member to the external world, and (*b*) the cœnæsthesic sensations, largely subconscious, that have their origin in the functioning of the internal organs. Secondly, there is the group of memory feelings that originate in all the diverse mental processes that *in the past* have had to do with the member in question; to mention only a few of these, there are the memories relating to its functions, both motor and sensory, those relating to its appearance, sidedness, position, and all that the member stands for to the individual; in short, all the memory feelings that can be aroused by the sight, mention, touch, or thought of the member in question. This group, to which I have applied the term "autosomatognostic" (34), has often in the past been confused with the totally different group of cœnæsthesic sensibilities.

The first of these two groups can be affected by either organic or functional disease, the second only by functional. No organic lesion, not even amputation of the limb, can affect the past memories that form the autosomatognostic group. We thus see that in functional disease two totally different forms of anæsthesia may occur, according to whether the dissociation implicates both groups or only the first. An important difference between the two forms is the different amount of distress caused to the patient. As is well known, the common type of hysteric anæsthesia causes so little conscious discomfort as to be commonly unknown to the patient. In sharp contrast to this is the distress, or even misery, endured by patients who have in addition an autosomatognostic defect; the distress is largely due to the impairment of the sense of personality with which the group is intimately connected, and indeed the symptom is usually described under the name of partial depersonalisation. It is plain that the autosomatognostic amnesia is fundamentally different from any sort of simple anæsthesia; it is a complete gap in memory; a whole group of past experiences is wrested from the patient's consciousness as completely as if they had never been.

The intimate correlation between achiria and the intensity of the autosomatognostic defect was indicated in the description of Case A. Full consideration of the relation of chirognostic to autosomatognostic feeling is impossible here, but the following remarks may be made on the pathological aspects of the problem. The majority of cases of anæsthesia presenting an autosomatognostic defect recover in their progress to restoration both groups of mental processes synchronously. In the cases of this nature that I have examined I have never found any indication of achiria, or of any other dyschiric manifestation. On the other hand, in the cases above narrated the recovery of the æsthesic group was evidently in advance of that of the autosomatognostic group, and the question naturally arises as to whether this is necessarily so in all cases of dyschiria, and, further, as to whether dyschiria necessarily arises when these conditions are present. In other words, when cleavage between the two groups occurs—of the kind just mentioned—is achiria (or any secondary dyschiric modification of achiria) a necessary consesequence, and, secondly, can achiria arise in any other way? The answer to the former problem is probably, and to the latter possibly, in the affirmative; so far as I know, there is no positive evidence deciding the points.

With regard to the first question, it is clear that if the affirmative answer is correct, *i.e.* that achiria must occur whenever their cleavage between the two groups occurs, then only negative evidence is obtainable. On the other hand, if this answer be wrong, then a single case showing this cleavage but no achiria would be sufficient to prove it so; no such case has to my knowledge been published. Chirognostic feeling seems to be an integral part of the autosomatognostic memory group, and is certainly associated with it more intimately than with the æsthesic group; this is shown by the mere fact of the nonoccurrence of achiria in the common type of cleavage between the groups, *i.e.* in simple anæsthesia, whether organic or functional, when the æsthesic group is abrogated, but not the other. If that is so, it follows that achiria must necessarily occur whenever the rarer type of cleavage—which, from its being characterised by the individual's capacity to feel with a part of his body that he cannot feel, might well be termed the "paradoxical" type—occurs. Further, in a study of the pathogenesis of phrictopathic sensation (33) I have tried to show that this syndrome is produced by the same paradoxical type of cleavage, so that the three syndromes of achiria, phrictopathic sensation and paradoxical suppression of autosomatognostic memories are intimately associated one with the other, and in all probability form a unitary morbid state.

With regard to the second question, as to whether achiria can arise in any other way than as a result of the abovementioned paradoxical cleavage, it is, of course, conceivable that an isolated dissociation of chirognostic feeling may occur apart from any other symptom, for this is a possibility characteristic of a certain type of hysteric symptoms. It seems to me, however, an exceedingly unlikely occurrence, for the reason that when the repressing mechanism of the underlying complex bears on the chirognostic feeling of a given part of the body, it will probably not succeed until the other, closely associated, autosomatognostic memories of the part are also implicated — a secondary phenomenon allied to what Riklin has shown to be the essential one operative in the causation of Ganser's syndrome (37).

Summary.—Achiria is a psychological dissociation of chirognostic feeling, a disaggregation of the kind characteristic of hysteria. It is probably always associated with what is here called the paradoxical type of cleavage, *i.e.* dissociation of the autosomatognostic memories of a given part of the body unaccompanied by abrogation of the æsthesic sensibilities of the part.

(2) *Allochiria.*

It is first necessary to complete the summary of Janet's hypothesis. The non-acceptance of this author's view concerning the essential nature of allochiria does not necessarily carry with it the rejection of his explanation of the mechanism of the phenomenon, and the arguments he uses are so plausibly ingenious as to demand a detailed consideration.

In 1893 Head (9) suggested that normally a cutaneous stimulus arouses a complex of sensations and memories, which he shortly terms a "mental image," in connection not only with the point actually stimulated, but also with neighbouring points, though the images corresponding to the latter points are suppressed and never become conscious. He further pointed out that the corresponding contralateral point must be regarded as the one of this series of neighbouring points that physiologically is most intimately related to the point stimulated. Janet (23), adopting this hint, thinks it probable that during the achiric stage, when, in a bilateral case, no difference can be detected between symmetrical stimuli, the intimate relation between the corresponding sensations—so intimate that they cannot consciously be differentiated by the patient—leads to an unusually close association between the mental images of corresponding points on the two sides of the body. He further thinks that as a result of this unusually intimate association between corresponding contralateral images, a stimulus applied to an allochiric part cannot evoke the proper image of the point stimulated without evoking at the same time that of the corresponding contralateral point. He explains the fact that the patient perceives only one image by the contraction of the field of consciousness, whereby a hysteric is unable to apprehend more than a certain number of simultaneous impressions. The further question why the patient invariably perceives only the wrong image Janet acknowledges to be very obscure; the only suggestion he offers (24), apart from some speculative remarks about "obsessions of contrast," is that perhaps the contralateral image arises a fraction of time later than that of the side touched, and that this latter, being earlier in time, fades and is forgotten or ignored, while the second one—that of the opposite side—is apprehended in consciousness.

It would be easy to adopt a hostile attitude towards this hypothesis on account of several defects, such as its over-concentration on the sensory features of the phenomenon, but there is no doubt that a sympathetic critic could find much to support it in the study of Cases A and B recorded above. For instance, Janet's assumption that a stimulus applied to an allochiric part evokes two "images" is borne out by the fact that Patient A could, under favourable circumstances, actually observe the two sensations.[1] It is true that habitually the patient perceived not the contralateral sensation above, as Janet supposed, but one that resulted from a fusion of the two sensations though it had the "sidedness" of only one of them. Further, it is not the case that the contralateral sensation arose later, as Janet assumes, nor is it probable that the homolateral sensation could fade and be forgotten in the way he describes, for, in fact, its duration is very substantially greater than that of the contralateral image. Still, these observations could possibly be assimilated to the hypothesis without rendering necessary any very profound modification of it.

However, there are even graver objections to Janet's hypothesis than the ones just mentioned. They arise mainly from a comparison of unilateral with bilateral allochiria, about which a word is necessary. It is improbable that such a peculiar and specific condition as allochiria can be brought about in quite different ways; important differences between the mechanisms of production of the two varieties may exist, but it is unlikely that these are fundamental. We shall therefore be right in asking of any hypothesis that it be equally capable of explaining both varieties of the condition, and also in giving preference to that one of alternative hypotheses which best includes both these varieties. For instance, an hypothesis might be invented to explain Case A, based on Head's suggestion (10) that the image corresponding to the site of greater sensibility is perceived. It might be said that the patient's true left side felt to him much more distinct than the other, "dead" side, and that his feeling of left-sidedness was on this account so vivid, as compared with that of right-sidedness, that it was attached to all sentient impressions, irrespective of their real origin. Apart, however, from the fact that Head refers here to the æsthetic sensibilities, which are not necessarily impaired in allochiria, it is clear, as Janet remarked (22), that this hypothesis would be tenable only in the case of the unilateral variety; the transference that constantly takes place *in both directions* in a case of bilateral allochiria cannot, of course, be explained in this way. We are thus justified in discarding such an hypothesis unless it be first shown that the two varieties of allochiria are totally different from each other.

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[1] I use this term—in its clinical sense, as distinct from the strict psychological sense of "pure sensation"—in preference to that of "image," as it seems to me to involve fewer intellectualistic implications than the latter.

Now, in connection with Janet's hypothesis, several of the observations made in the unilateral Case A may perhaps with an effort be fitted in, as hinted above, but there are others that are quite inconsistent with it. Let us compare certain features of Case A with the corresponding ones of Case B. In both cases if the patient was touched on the right arm he declared that he had been touched on the left arm, and if he was asked to move the right arm he always moved the left without knowing that he had made any mistake. But here the resemblance ceases. For if one touched both patients on the right arm and simply asked them to move the arm touched, B moved the right arm, while A moved the left arm ; in other words, B's movement was correct though his naming was wrong, while both A's movement and his naming were wrong. Apply the image hypothesis to this experiment. According to Janet both patients named the side incorrectly because they perceived not the image of the point touched but that of the corresponding contralateral point. But in neither case was this true. In Case B all the evidence—from the way in which the patient indicated the limb touched, from the numbering of successive bilateral stimulations, etc.—went to show that the patient experienced the sensation corresponding, in fact, to the point touched ; his error consisted in thinking that that limb was the left one. His reference of the sensation to a given point in space was correct enough, though according to the image hypothesis it should have been faulty. If, for instance, he was sitting between a window on his right and a table on his left, he was sure that the touch was on the " window " side of him, as, of course, it was. In other words, he did not experience a sensation on the opposite side, he experienced it on the correct side, but named this side wrongly. Quite otherwise was it with Patient A. He did experience the sensation on the wrong side, and under the above circumstances was quite sure that the touch was on the " table " side of him. But he experienced two sensations, both equally on the left, one on a " dead " part and the other on an " alive " part. According to the image hypothesis he should have experienced only the latter, a hallucinatory sensation of the wrong side. But, in fact, what he felt was mainly the former, as was shown by its duration, etc.: the sensation on the "alive" side was quite momentary, as in the normal, but the full sensation experienced did not begin to fade in intensity till half a minute later. Again, if the image hypothesis were a correct explanation the patient should not have been able to distinguish between a touch applied to the right side and one applied to the left, for his sensory acuity was equal on the two sides, and he was equally sure of the "leftness" of both; but though he habitually made no distinction between two such touches he was quite able to do so with certainty, and there were marked differences in the features of the two sensations, as was mentioned in the description of the case.

Further, it is evident that the previous pathologically intimate association between the symmetrically opposite images, the assumption of which lies at the basis of Janet's hypothesis, cannot occur in unilateral achiria even if it does—and there is no evidence in support of this—in bilateral achiria. Nor is there any evidence to show that achiria often or even ever precedes allochiria.

It therefore does not become necessary to consider the many objections to the hypothesis in connection with bilateral allochiria—Janet himself with his usual scrupulous scepticism confesses the extreme tenuity of his suggestion, which was offered *faute de mieux*, as to why the wrong image is invariably perceived—for the above considerations show that there are insuperable difficulties in the way of the application of it to the unilateral affection.

Finally, it may be remarked that the inadequacy inherent in Janet's image hypothesis originates in its basal assumption that the allochiric reference of sensation is a variety of alloæsthesia, *i.e.* an error in localisation due to hypoæsthesia. He has maintained this opinion from the time of his first article on the subject, entitled, "Une altération de la faculté de localiser les sensations" (13), whereas it is here advanced that allochiria is not an alteration of this faculty, nor is it due to hypoæsthesia. The hypothesis thus resembles those of Head and Spearman as being in no way applicable to allochiria, for it is, in fact, an explanation not of this condition, but of alloæsthesia. It becomes necessary, then, to find a new viewpoint from which the problem can be examined afresh.

As was previously stated, it is important to view the manifestations of allochiria, including the introspective aspects, as a whole, and not to confine one's attention to the sensory phenomena. If, now, from this standpoint we consider the transition from the achiric to the allochiric stages in Case A, we note two especially prominent features. To the patient the change meant essentially two things—one dependent on a gain in dextrality, the other on a gain in autosomatognostic feeling. In the first place he was again aware of a whole group of motor functions—dextral acts—the meaning of which he had previously forgotten. In the second place we can hardly doubt that what he described in the allochiric stage as a " strange dead half on the left side " was in fact the true right half of his body incompletely felt. This partial recovery of autosomatognostic feeling was always accompanied by a striking change for the better in the patient's sense of well-being. Not only was the bulk of his bodily feeling multipled by two, but other qualities seemed similarly to expand ; thus his courage and feeling of power, strength and capacity also grew in the same moment. We see, then, that what may be called the total assimilative capacity of the patient (or what Janet calls the capacity for mental synthesis) had decidedly increased in the transition from achiria to allochiria.

These considerations introduce the suggestion that perhaps the erroneous allocation of chirognostic feeling, described above as being the essential characteristic of allochiria, is in some way a process whereby the gain in assimilative capacity just mentioned may be brought about. Such replacements are well known in hysteria under the name of transference phenomena. The mechanism by which they occur is too large a subject to be discussed here, but it may be remarked that they represent to the patient an advantageous compromise whereby one defect is replaced by another less unendurable one. A clinical fact that seems to be fairly well established in this connection is that this interchange of symptoms is a process which occurs much more readily in some patients than in others, a matter that has a considerable bearing on prognosis.

This hypothesis again raises, from another point of view, the question of the relation of chirognostic to autosomatognostic feeling. The observations detailed in the above cases clearly show that there are numerous degrees in the extent to which the latter feeling may be lost. Such variation is never observed with chirognostic feeling. Either it is surely present in all its distinctness, or it is totally absent ; there seems to be no stage between the two, and it is certain that the conviction with which a given chirognostic feeling is experienced is altogether independent of the question whether it is correctly or incorrectly associated. Now the presence or absence of chirognostic feeling makes all the difference to the capacity to recall autosomatognostic feeling, *i.e.* it has a most important influence on the individual's capacity to feel a given part as an integral part of his personality. It seems to be well-nigh impossible for a normal individual distinctly to feel merely " This is my hand " ; he can feel only " This is my right hand " or " This is my left hand." In other words, " hand " apart from " sidedness " is an intellectual conception and does not correspond with direct personal feeling. It would further appear that the appreciation of an inappropriate chirognostic feeling is effective in this respect in the same way as that of an appropriate one, though not by any means to the same degree. An erroneous association of an inappropriate chirognostic feeling is thus a makeshift, the only one possible under the circumstances, whereby an achiric patient can recover the memories of a given part, together with the knowledge of its functions. In Case A we might say that the patient had no option between feeling nothing of the right half of the body—and suffering all the serious disadvantages that ensue from this loss—and feeling it on the left side. Allochiria presented, then, a means of escape from the disadvantages of achiria. For the mechanism to be successful it was essential that the erroneous association should be firm ; the patient had to feel with the utmost conviction that the right limbs were on the left. Any trace of doubt on the matter brought back to his mind the strange depersonalised feeling, which was so intensely unpleasant. The strong instinctive tendency to cling to the feeling of certitude offered by the transference amply accounted, therefore, for the patient's aversion towards dissecting the feeling of his so-called only left side, and for the difficulty I experienced in getting him to analyse the differences between the two left sides.

It will be noticed that we cannot call the erroneous allocation of " sidedness " the simple absence of a given function, as we can the other hysteric defects referred to, but it has in common with these the feature of being an obvious disadvantage and drawback in itself, a penalty paid in order to secure another advantage. Really its very appearance of meaninglessness as a phenomenon in itself should suggest some process of a compensatory nature, should hint that it occurs in order that something else, of a useful nature, may occur. To anyone inclined to regard it from this teleological standpoint the main difficulty must hitherto have been in seeing in what possible way such an apparently meaningless occurrence could have any function, in seeing what gain could accrue, however indirectly. I am convinced that the clue to this mystery lies in the relation of chirognostic to autosomatognostic feeling. To the patient under consideration the endowment of the feeling of the right half of the body with left-sidedness was so far as it went merely an embarrassing awkwardness, but it had the solid advantage of enabling him to feel something of his right half and its functions; it was in this respect the next best thing to endowing that feeling with right-sidedness, a consummation that was prevented at this stage by the completeness of the loss of " right-sidedness."

Contrast of Unilateral and Bilateral Allochiria.—Before discussing the reasons why unilateral allochiria should arise in one case and bilateral in another, it is first necessary to define the actual differences between the two conditions, beyond the mere fact that one is unilateral and the other bilateral.

In the series of observations, mentioned above in the discussion of Janet's hypothesis, the difference noted between the two cases were mainly three: (1) A referred a point touched across to a point on the other side of his body; B referred it to its correct position in space, a position which, however, he happened wrongly to call left. (2) A felt two sensations, both on the left side, one phrictopathic, the other normal; B felt only one, a phrictopathic one. (3) At a time when both motor and sensory allochiria were shown to motor and sensory tests applied separately, if these were combined by first touching the right arm and then asking the patient to move the arm touched, the following difference was seen:—A indicated the arm incorrectly both in speech and in movement, by calling it left and moving the left; B indicated it incorrectly in speech but correctly in movement, by calling it left, but by moving the arm actually touched.

In generalising from these observations we may say that the essential difference between the two cases was that A felt that his right side was actually displaced " over on to the left side," as he often expressed it, whereas B did not; B's error was merely one of incorrect naming, and was one that he did not recognise. In other words, A appreciated not only that something was wrong, but exactly what was wrong; B didn't know that anything was wrong.

This explanation seems to me to account for the three above-mentioned differences. The *first* one is a direct corollary of it. The *second* difference may be otherwise expressed by saying that both patients experienced a phrictopathic sensation, but Patient A experienced in addition a normal sensation. The phrictopathic sensation is probably best explained as being the sensation arising as the direct result of stimulation of a bodily member, the autosomatognostic memories concerning which are dissociated to a greater extent than the æsthesic sensibilities (" paradoxical cleavage "). The normal left-sided sensation that Patient A experienced in addition appears to have been an hallucination, the function of which was, by practically fusing with it, to confer left-sidedness on the originally sideless (achiric) phrictopathic sensation; in accord with this is the fact that the normal sensation showed the same delay as the phrictopathic, so that both always appeared synchronously. Janet's description of allochiric transference as a kind of hallucination (21) is, according to this view, legitimate only so far as the unilateral variety is concerned, for the following reason:— In a bilateral case there is no normal side to serve as a standard; both sides are incorrectly named. Therefore when a touch on the right arm is called left-sided there is no memory or knowledge of any other kind of left-sided touch that might conflict with this and introduce doubt. The matter is not so straightforward in the unilateral case. Here the memory of a true left-sided touch could soon dispel the belief that a touch on the right arm was left-sided, but for the fact that it itself is also experienced as an accompanying hallucination. This occurrence is no doubt aided by the perfect superimposition of the two halves of the body which the patient experiences on introspective examination. The *third* difference is similarly explicable on this view. When the right arm was touched and the patient asked to move the arm touched, A moved the left, but B. moved the right, though both thought that the left arm had been touched. It might at first sight be thought that this difference was due to the fact that both patients were trying to move their left arm, which they thought was the one touched, for their mode of response to this attempt was certainly different—namely, when A was asked to move his left arm he did so correctly, whereas B under the same circumstances moved his right. This is probably a correct explanation of the phenomenon so far as B is concerned, but with A it would be more accurate to say that he was trying to move not his left arm, but *one* of his left arms, the " clever " one. It will be remembered that A could not move his right arm when a conscious effort was employed; he got the feeling of moving his "clever" arm by only actually moving his real left arm in a certain way. I would therefore attribute the difference in question to the fact that A used the left arm, in conscious efforts, for both the "clever" left and the real left; it was the former he was moving in the test in question. Looked at in this way it will be seen that the difference is less than at first appears, and, in fact, it may be said that both patients moved the arm on which they felt the touch. B felt the touch on what he called his left arm, and therefore moved what he thought was his left arm; A felt the touch on what he called his "clever" left, and therefore moved what he thought was his "clever" left.

Further consideration of the above generalisation well illustrates how inaccurate it is to describe allochiric transference of sensation as an error in localisation. In both cases the stimulus is correctly localised, not only in other dimensions, but even as regards the sides, in the sense that the patients knew which half of the body was touched. This statement refers even to the response to a simple stimulus, and not merely to the combined test that we have just been discussing. Patient A, when touched on the right side, knew it was his "clever," "dead" side that had been touched, and not his "real" left; patient B, under similar circumstances, was equally sure it was his right side, as indicated in every way, except by naming it. Both patients erred in calling the touch a left-sided one, and felt it to be evidently left-sided, but for different reasons—A because he felt that his "clever" side had been swivelled round a vertical axis on to the left side, B because he directly felt the side in question to be a left-sided one. With B a complete transference between the two sides, including all their functions, had taken place; with A only a folding over of the right side on to the left. Both patients, therefore, knew surely which side had been touched, and erred, not in this perceptive process, but in the subsequent mental processes that occurred when they tried to indicate the side of the part touched. If they were left to themselves and allowed to indicate the side in their own phraseology, and by various adjuvant devices, no mistakes were made, error creeping in only when the nomenclature of sidedness was reached. Put more summarily, both patients knew correctly which side had been touched, though they were wrong in their opinion as to which side this was; they knew the half of the body, but not on which side it was.

(3) *Synchiria.*

Janet's image hypothesis, which he applied also to dyschiria, need not be further discussed here, as it has already been fully considered in connection with allochiria.

Synchiria is evidently a state in which the production of the erroneous allochiric association is occurring at a time when the normal association is still intact. The peculiarly transitional nature of the symptom will be pointed out when we consider the relation of the different members of the dyschiric group to one another.

The chief interest of the condition for pathology is the additional light it throws on the mechanism of allochiria. If the teleological explanation of allochiria offered above is valid, then it might be said that the patient can tolerate in consciousness the feeling of a given part of his body only on condition that it is felt on the opposite side. In synchiria we see the beginning of this process. Stimulation of the right arm arouses memories of an arm that can be accepted as right-sided only if it is at the same time left-sided. The strangeness and incomprehensibility of this feeling accounts for the patient's repugnance to the condition. This he thought was due to his lack of control over the limbs concerned; as long as he experienced the unsettled feeling described above, so long did he feel unsure about the use of the limbs and about his capacity to perform the functions relating to them. Allochiria then meant to him essentially the exchange of insecurity for certitude. This illustrates the great importance that synthesis of chirognostic feeling has for autosomatognostic feeling, for, although the feeling of the limbs concerned was more vivid and evidently nearer the normal in the synchiric stage than in the allochiric, yet the patient greatly preferred the latter on account of its definiteness and feeling of security and controllability. The sensory features also accord with this point of view.

A cutaneous stimulus evokes two sensations in synchiria whether this is unilateral or bilateral, but in allochiria only if it is unilateral. The explanation of this was in part given when the two forms of allochiria were contrasted. An hallucinatory contralateral normal sensation is necessary to arouse the abnormal chirognostic association only when the memory of such a contralateral normal sensation might otherwise compete with the homolateral (in synchiria) or sideless (in allochiria) phrictopathic one, and hence prevent the consummation of the illusion. This is so in both forms of synchiria and in the unilateral allochiria, not, however, in bilateral allochiria.

(4) *Review of Dyschiria.*

Before reviewing the pathogenesis of the dyschiric manifestations as a whole it will be convenient shortly to consider two further questions here.

(*a*) *Relation of the Dyschiric Stages to One Another.*—It will be sufficiently evident from the description given of Case A, or from that of Janet's case (16), that achiria represents the stage of most advanced disaggregation and synchiria that of least, so that the arguments that might be brought in support of this statement may be omitted.

At first sight there seems a perfectly even course of events between the normal in the one direction and complete anæsthesia in the other, and I have frequently watched the evolution of all the dyschiric stages take place in as short a time as a couple of minutes. On closer examination, however, it can be observed that there is a point at which this apparent evenness shows a sudden break, a phenomenon that has an important bearing on the theory of allochiria. When in the synchiric stage of Case A the right side felt as though it were drifting in an indefinite medium, being neither on the right side nor on the left, the patient's general condition of disagreeable insecurity was about the same in all the sub-stages; as, now, it passed over to reach its safe anchorage on the left, instantaneous superposition would occur in a way that almost suggested the snap of a lock, and the patient, having found security in allochiria, would sink back with the profound sigh of relief given by one who again exchanges doubt for certainty. In passing from allochiria to the normal it was so difficult to maintain synchiria for the time necessary to progress to the normal that often the patient would slip back again, as with a click, into the stable resting stage of allochiria. This evanescent character of synchiria probably explains why the condition has been previously observed in only two of the twenty-nine cases of allochiria on record.

Similar features are observable in the case of achiria. The passage from achiria to allochiria occurred with the same dramatic suddenness as that from synchiria into allochiria. Further, during the passage through the achiric stage the patient showed the same tendency to slip back into complete anæsthesia as he did to slip back again into allochiria when traversing the synchiric stage. Achiria is thus also a temporary stage that has to be traversed in order to pass from complete anæsthesia to allochiria, and is more unpleasant than either of these. This explains the rarity of the condition, which no writer other than Janet has previously recognised.

The conclusion is thus reached that allochiria is the only stable variety of dyschiria, so that if a permanent defect in assimilation of chirognostic feeling exists it will find expression in allochiria. This accounts for the long duration that may be seen in cases of allochiria; in Janet's case the syndrome was present at different times over at least twelve years, and patient A spent seven years of his life fluctuating between the anæsthetic and allochiric stages, the latter occupying the greater part of the time. Achiria and synchiria are essentially transitional stages, of an unpleasant nature, that have to be traversed in order to reach more satisfactory states. Whether they are necessary stages is not known, but it is certain that they may last for a very brief period, as short as a few seconds. It is highly probable, therefore, that if achiria or synchiria is observed in a given case allochiria will surely be observed at some other time, but the contrary by no means certainly follows.

(*b*) *Difference between Unilateral and Bilateral Dyschiria.*—In the discussion in connection with allochiria, the conclusion was reached that the essential difference between the unilateral and bilateral cases lay in the illusion of displacement, whereby one half of the body seemed to be folded on a vertical axis until it coincided with the other half, being conscious in the former case, whereas the illusion of interchange between the two halves of the body in the latter case was throughout unknown to the patient. The question immediately arises as to whether this difference is one that holds good in other than the present cases. Unfortunately I know of only one instance in the literature where allochiria is more than mentioned; in that, the bilateral case published by Janet, there is no evidence that satisfies me on the points in question. It is not certain even whether his patient merely named the side of a touch wrongly or whether she felt it on the opposite side. She seems to have recognised the error as soon as she looked at the limb touched, in which respect she perfectly resembles Patient B, but it is not mentioned whether she could then continue to feel the allochiric error and introspectively discover what was wrong, as could Patient A, or whether she became so confused, as did Patient B, by the intolerableness of the situation that she had to end it one way or the other.

Pending further experience, therefore, judgment must be reserved on this question, but, if the differences above noted are found to hold good in further cases, then we may have in them a clue to the obscure problem of why unilateral allochiria occurs in one case and bilateral in another. The two facts I would bring together in this relation are that: (1) the illusion in the unilateral case violently conflicted with previous experience, that in the bilateral not at all, and (2) neurasthenia complicated the latter case and not the former.

With regard to the first point, it is unnecessary again to discuss the striking contrast between the two cases in this respect. Patient A, it is true, was exceedingly puzzled by the bizarre phenomenon of feeling two distinct halves of the body on the same side, but he accepted it, discussed it at length, and lived on the assumption of it for seven years. Patient B, on the other hand, was unaware of his error, and at the least indication that anything was wrong, such as by his catching sight of the hand he was incorrectly naming, he immediately found the situation impossible. Thus A accepted a situation that grossly conflicted with all past experience, while B was quite unable to reconcile the two.

Taking next the second point, we recognise that clinically there is a gradation in cases of hysteria according to the extent to which symptoms may arise that conflict with previous experience. It is familiar how amazingly resistant of contradictory experience certain hysterics are, an observation especially often made on patients in the state of hypnosis. If, for instance, a fixed idea is produced in the patient's mind that he cannot see a given individual, this individual may shout in his ear, come into physical contact with him, and adopt any means to demonstrate his presence, all in vain; no experience, however grossly obvious, will be accepted which contradicts the fixed idea. The fact that such a patient will entertain the presence of two contradictory and mutually exclusive views, and yet not allow the contradiction to have the least influence on his attitude, is equally striking. At the other end of the scale from this is the neurasthenic, whose symptoms are always to him comprehensible enough. Insomnia, tiredness, dyspepsia and headache are facts more easily reconcilable with past experience than feeling both halves of the body on one side. I have tried elsewhere (28) to define these differences in terms of the psychological disaggregation, describing that present in hysteria as "massive" and that in neurasthenia as fragmentary or "molecular."

One is thus led to speculate as to whether the two forms of allochiria depend on the clinical variety of hysteria present, the bilateral one occurring in the variety that most approximates to neurasthenia. In support of this, the observation may be referred to that whenever Patient B's neurasthenic symptoms diminished the allochiric manifestations were present even in the waking, more conscious state, provided he was not actually looking at the limbs in question. If this suggestion be valid it will make intelligible the strikingly greater facility with which introspective analysis could be carried out in the clear, definite mind of Patient A; this was done to an extent that was hopeless to attempt in the confused and neurasthenic mind of Patient B.

It will be noticed that in this argument it has been assumed that bilateral allochiria conflicts with experience to a greater extent than does the unilateral variety. The justifiability of this assumption will, I think, be apparent from reflexion on the introspective aspects of the conditions. It is difficult, if not impossible, to conceive of a case of unilateral allochiria in which the condition could escape direct introspective observation. On the other hand, bilateral allochiria must totally escape introspective observation until some accessory circumstance, such as sight, reveals the error; Patient B, for instance, was almost always allochiric in the dark, but only rarely in the light.

Whatever may be the final explanation, however, the distinction between the two classes certainly seems to be very sharp. In an experimental study, an account of which I hope later to publish, it was found that all attempts to induce bilateral dyschiria in a unilateral case, and *vice versa*, met with only the most limited success. As far as my experience goes, any given case definitely belongs to one or the other class throughout its whole course, and never shows any tendency to pass from one class to the other. When the dyschiric process starts it is immediately decided to which class the case in question will belong, once and for all.

On the other hand, it is likely that in both classes the defect is primarily a unilateral one, a fact of some importance for the analysis of the underlying complexes and for the necessary re-educative treatment. The ground for this view is that even in cases of bilateral dyschiria evidences of asymmetry are usually, and perhaps always, manifest. That this was so, for instance, in Case B, which was carefully investigated from this point of view, was put beyond doubt by the following observations :—

(1) Introspectively the patient was certain that one side, which he erroneously called the right, was far less distinct in feeling than the other; he would say that it was more "bloodless and numb," and less "distinct and alive" than the other.
(2) Of two simultaneous stimuli, one on each side, only one was felt; this was the one actually applied to the left side. It will be remembered that the sensibility was of equal acuity on both sides.
(3) Of two successive touches, one on each side, one was felt more distinctly than the other; this also was the one applied to the left side. This observation, as well as the last, was made by means of the numbering test described in the account of the case.
(4) The abnormal association of left-sidedness was more firmly fixed than that of right-sidedness, as was shown, for instance, in Observation IV.

There is, therefore, a consistent body of evidence showing that the defect was in this case more pronounced on one side, viz., the left. Janet unfortunately makes no reference to any kind of comparison between the two sides in his bilateral case, nor apparently did he apply any of the above tests. In one of Sollier's cases (38), however, there was clear evidence of asymmetry in distinctness of feeling.

Dyschiria as a Whole.—The evidence gained from the observations here recorded seem clearly to demonstrate that in dyschiria we have essentially to do with an affection not of sensorial acuity, but of synthesis of chirognostic feeling. In achiria certain mental processes fail to arouse a normal association of chirognostic feeling, in allochiria they arouse only an abnormal one, and in synchiria they simultaneously arouse both a normal and abnormal one.

The varying distribution of dyschiria can be readily described in these terms. Cases of allochiria occur in which the erroneous reference of sensation concerns only certain parts of the body and only certain kinds of stimuli: for instance, as in Dobie's case (4), only painful stimuli may be referred, and not tactile. This may be expressed by saying that painful sensations failed to arouse the normal chirognostic association, whereas tactile ones succeeded, a dissociation highly characteristic of hysteria.

As read in the light of the observations recorded, and the hypotheses offered, in this paper, the pathogenesis of a case of dyschiria may be summarily described as follows:—Dissociation occurs of the memories of one or more members on one side of the body, this, like all hysterical disaggregation, being due to the action of a repressed complex. The suppression of chirognostic feeling is in this instance more intense than that of the other members of the autosomatognostic group. The æsthesic sensibilities may also be suppressed, but if so they are subsequently recovered. It is impossible properly to recover the autosomatognostic memories so long as they are associated with the customary chirognostic feeling, but they can be recovered provided they are associated with the complemental chirognostic feeling, *i.e.* provided allochiria occurs. At this moment it is decided whether the allochiria be unilateral or bilateral, this perhaps depending, as was above suggested, on the type of hysteria present. Achiric and synchiric stages occur in the transitory manner above described.

All dyschiric manifestations, therefore, are typically hysteric forms of reaction to the suppression of the chirognostic feeling of a given part of the body. In no affection is it truer than in hysteria that diagnosis should precede treatment, and elucidation of a case of allochiria, and therefore rational treatment of it, is impossible without a knowledge of the problems of dyschiria, a partial answer to which it is the object of this paper to contribute.

(5) *Summary of Conclusions.*

1. The anatomical hypotheses concerning allochiria are contradicted by all the facts bearing on the subject, and should be discarded. No psychological hypothesis concerning either dyschiria or allochiria has hitherto been given, for those offered by Head, Janet, and Spearman treat of allochiria as though it were a variety of alloæsthesia, *i.e.* an error in localisation due to a certain kind of

hypoæsthesia, and apply solely to the latter condition, the fundamental distinction between dyschiria and alloæsthesia not having been recognised.

2. Dyschiria is a form of psychological disaggregation, of the variety characteristic of hysteria. It is primarily a defect in the synthesis of the feeling of "sidedness" (here called chirognostic feeling).

3. Allochiria is the only stable variety of dyschiria, achiria and synchiria being temporary and transitional stages, the former between allochiria and anæsthesia, the latter between the normal and allochiria. A patient who has dyschiria usually fluctuates between the conditions of anæsthesia and allochiria.

4. Achiria is an amnesic failure of association between certain mental processes (concerning different bodily members) and the chirognostic feeling that normally is associated with them; allochiria is achiria in which an abnormal association has been formed between these mental processes and the complemental chirognostic feeling; synchiria is the co-existence of the normal and abnormal associations.

5. The mental processes relating to a given part of the body are divided into: (*a*) the æsthesic group of perceptions, and (*b*) the autosomatognostic group of memory feelings, of which chirognosis is one. When disaggregation implicates the second group, and the first is relatively or absolutely spared (a phenomenon here referred to as "the paradoxical type of cleavage"), then achiria—or any other secondary dyschiric manifestation—results, and any sensation following stimulus of the part concerned shows the phrictopathic attributes previously described.

6. When the paradoxical type of cleavage occurs, and return to the normal is prevented by the force of the repressed complex causing the disaggregation, then the autosomatognostic memories concerned can be recovered only at the expense of replacing their constituent chirognostic feeling by its complement. It is thus suggested that allochiria subserves the function of enabling certain autosomatognostic memories to be once more apprehended in consciousness, a consummation which is of marked benefit to the personal well-being of the patient. This teleological hypothesis of allochiria regards it as being akin to the transference phenomena of hysteria, in which one symptom is replaced by another less detrimental one.

7. It is probable that all cases of dyschiria are primarily uni-

lateral, but immediately pass permanently into one of the two classes, and show no subsequent tendency to change. It is tentatively suggested that the class chosen depends on the type of mind concerned : unilateral dyschiria will occur in pure hysteria, bilateral dyschiria in hysteria complicated by neuræsthenia. The essential difference in the mechanism of unilateral and bilateral allochiria is that in the former the illusion of displacement of the part of the body in space is accessible to introspection, and thus involves a much grosser contradiction of previous experience than does the latter condition.

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36. Von Leyden and Goldscheider. "Nothnagel's Spec. Path. u. Ther.," Bd. x., Art. "Die Erkrankungen des Rückenmarkes und der Medulla Oblongata," 2^{e} Aufl., Wien, 1904, S. 162.

37. Riklin. "Zur Psychologie hysterischer Dämmerzustände und des Ganserschen Symptoms," *Psychiatr.-Neurol. Woch.*, 1904, S. 185.

38. Sollier. "Genèse et nature de l'hystérie," Paris, 1897, t. ii., pp. 228, 235, etc.

39. Spearman. "Analysis of 'Localisation,'" *Brit. Journ. of Psychol.*, 1905, Vol. i., p. 304.

40. *Ibid.* *Op. cit.*, p. 305.

41. *Ibid.* "Die Normaltaüschungen in der Lagewahrnehmung," *Wundt's Psychologische Studien*, 1906, Bd. 1, S. 388-492.

42. Weiss. "Über anderseitige Empfundungswahrnehmungen und anderseitige Bewegungserscheinungen," *Wien. Med. Presse*, Nov. 22, 1891, Jahrg. xxxii., No. 47, S. 1779.

NEURONOPHAGY.

By Major C. J. ROBERTSON MILNE, M.D., I.M.S.

A Summary of "Neuronophagie" ("La Cellule Nerveuse," Tome Second, Chapitre xxxii. Par le docteur G. Marinesco. Publiée par O. Doin et Fils, editeurs. Paris, 1909.)

Neuronophagy, or the phagocytic destruction of nerve cells, does not appear to have received in this country the attention it deserves. It is true that it is a purely natural process which, since the brilliant work of Metschnikoff on phagocytosis, can be readily accepted, for it is simply an expression of the manner in which nervous tissue, destroyed or degenerated from any cause whatsoever, disappears or is removed during the life of the individual. Although the process generally may be characterised as simple, yet in the essentials necessary for its accomplishment it is exceedingly complex, and there are certain points of importance which require particular attention in any attempt to elucidate the exact principles involved in neuronophagy. These points include a record of the conditions under which neuronophagy is found to occur, and an investigation as to the nature and origin of the cells which assume phagocytic characters in nervous tissues.

Marinesco, who claims to have introduced the term "neuronophagy" to science, devotes a chapter of his latest work—"La Cellule Nerveuse"—to an admirable exposition of the whole subject. He commences with an historical survey of the question, quoting the various views put forward on this subject since 1870, when Obersteiner described the accumulation of "grains" round the nerve cells of the cornu ammonis. Popoff in 1875 remarked the penetration of leucocytes into nerve cells in various infectious and experimental lesions. Between 1880 and 1890, during the particular investigation of rabies which Pasteur's work had stimulated, various similar observations were made, the cellular accumulation around the degenerating nerve cells being generally regarded as leucocytic in character.

Weigert in 1890 is then referred to as enunciating the law that when nervous tissue disappears from any cause whatsoever, it is always the neuroglia which reacts by a nuclear and fibrillary proliferation. Since then Nissl, Lugard, Cajal, and Marinesco himself have, as he adds, confirmed this observation of Weigert's. Marinesco was led to regard the process as of a phagocytic nature while studying the pathological changes in nervous tissues in tetanus and botulism. He then clearly indicated that a distinct antagonism exists between nerve and neurogliar cells; and Ossokine, who subsequently to Marinesco studied this question, is quoted as declaring that neuronophagy ought to be reckoned as a secondary phenomenon which only develops after profound modifications in the nerve cells, and further, that mononuclear cells, endothelial cells, and neurogliar cells are all equally capable of displaying the phenomena of phagocytosis.

These contentions in proof of neuronophagy have been upheld by the majority of investigators, but some, such as Cerletti, deny that any such phagocytosis of nerve cells ever occurs.

Nissl states that the neuronophages are of neurogliar origin, and terms them "Gitter-zellen" or "cellules grillagées." He admits further that leucocytes may become neuro-phagocytic, but are apt themselves finally to degenerate and be devoured by the "cellules grillagées." Cajal, Lugard, and Marinesco emphasise the importance of the small neurogliar cells seen in the neighbourhood of nerve cells in healthy, but especially in pathological, states, in which latter they often proliferate and become very numerous. These cells, which normally appear to consist of a nucleus only, are exceedingly susceptible to all toxic agencies which affect nervous tissues, increasing in size and numbers in an extraordinary fashion: these cells they term "les cellules satellites." A vast amount of research is adduced by Marinesco in the chapter under review to prove that these satellite cells are of neurogliar origin, and to show their behaviour and development under varying conditions. Marinesco's own view may be stated in his own words: "In several cases of acute myelitis in man, or experimentally produced in animals, I have found, from the commencement of the inflammation, a distinct reaction of the neurogliar cells, whether interstitial or satellite, consisting in swelling of the nucleus, and the presence round the latter of a cellular protoplasm, which stains intensely by polychrome blue. In this case the neuroglial cells sometimes so closely resemble small caryochrome cells as to be mistaken for them." On p. 480 there is, it should be noted, an excellent diagrammatic representation of the development of neurogliar cells thus described.

Numerous experiments are thus detailed to prove the reaction of the nerve and satellite cells to various stimuli. These experiments have been performed chiefly in connection with the spinal ganglia; exposure to great heat of the whole body of an animal, injections of acetic acid, distilled water, or normal salt solution, equally exhibiting the phases of neuronophagy. The nerve cells lose their chromatophile elements, becoming swollen, altered in shape, while their nuclei are displaced and finally disappear, as do the cells themselves: on the other hand, the satellite cells increase in number and size, becoming enriched with chromatic elements.

It should be remarked that in figure 142 on page 491, where a nerve cell of a plexiform ganglion destroyed by the injection of distilled water is depicted as surrounded by phagocytic (satellite) cells, the impression suggested by the appearances in this diagram is that these satellite cells are not neurogliar in origin, but are derived from the endothelial lining of the lymph space in which the nerve cell was lodged.

The inter-relation of nerve cells and their satellite neurogliar cells is next discussed by Marinesco, who is of opinion that in health the former secrete substances which exercise a controlling influence on the size and development of the latter: if any noxious or toxic agent affects the former, this controlling secretion is diminished in quantity and quality, and the neurogliar cells react accordingly by increasing in size and in numbers.

Cajal is briefly quoted as stating the conditions of neuronophagy as he considers they occur. He believes that the amœboid granular cells of Nissl—"les cellules grillagées" which Cajal terms the "stellate" cells—which are mesodermic in origin, are the true phagocytes, and while they are "scouring the substance (of the brain) by the absorption and digestion of the products of degeneration of nerve cells, the satellite cells, as the cells of the neuroglia, are forming the fibrillary substance which fills up the voids left by the absorption of the products of degeneration."

Marinesco then details other experimental proofs of phagocytosis occurring in cases, such as cauterisation of the cerebral cortex, where a rapid and complete destruction of nerve cells results. The manner of destruction, or rather of disappearance, of the dead nerve cell by phagocytic action is described minutely. The stellate cells of Cajal, the true phagocytes, whose origin is not more definitely stated than in the term "mesodermic," are declared by their processes (pseudo-podia) to form channels in the dead body of the nerve cell; to enter by these channels; and to finally absorb all the dead substance. By fixing fresh tissues in Zenker's fluid these changes can, it is said, be successively observed. They have only been studied hitherto in connection with the nerve cells of spinal and cerebral ganglia.

Marinesco, in concluding this description of neurophagocytosis, says: "Then the digestion is complete, and it is no longer possible to distinguish the cells of Cajal from the proliferated endothelial cells." But may not the former have been originally developed from the latter, the difference in appearance during neuronophagy being simply due to the phagocytic rôle having been assumed by "selected" cells?

A statement is also made of the differences observed between cold- and warm-blooded animals as regards the experimental transplantation of ganglia. In the former, such as the frog, the satellite cells are the exclusive neuronophages.

Further experiments are then described to prove the indubitable existence of neuronophagy, and especially to show that only completely necrosed cells disappear by this process. Marinesco considers that the term neuronophagy should be replaced by necrophagy.

It should be pointed out that on page 516 there is a diagram of a nerve cell of a spinal ganglion undergoing phagocytic disintegration as the result of injection of bile, but in interpreting the appearances thus obtained, Marinesco adds an element of confusion to the subject by referring to the "satellite cells of Cajal" as the phagocytes, making no distinction such as he previously draws between the "stellate cells" of Cajal and the satellite neurogliar cells.

After detailing more experiments to indicate the complex nature of the process, Marinesco concludes thus: "All these experiments show us that the idea of neuronophagy, which I believe I have been the first to introduce into science, is a complex one, and that the main condition for its production is the death, or better still, the necrosis of the nerve cell, which, by a kind of positive chemiotaxis, attract the phagocytes, which are always motile cells and of mesodermic origin. They are situated in the neighbourhood of the nerve cell, like the cells of Cajal, or at a distance from it, like the migratory cells of the blood. This attack never takes place when the nerve cell is still living, and as I myself first maintained, and Cajal after me, the nerve cell exerts a kind of moderating action upon the nutritive exchanges of the satellite cells; the dead cells, on the contrary, excite their nutrition. The neuronophagy becomes a necrophagy. It is for this reason that I think that the phenomena which take place round the fenestrated and torn cells which have been described by Cajal, Esposito, myself, and others, do not belong, properly speaking, to a process of neuronophagy. Indeed, these cells not only are not dead, but they react by the formation of new expansions to the result of excitation produced by the compression exerted by the satellite cells; they are, as I have said, in a condition of plastic irritability."

We may then shortly analyse the position at the present time as regards this process of neuronophagy thus described by Marinesco.

1. Neuronophagy, or better still, neuro-necrophagy, is the process by which dead or degenerated nerve cells are removed from the living organism.

2. The process in its details is a complicated one, and has not been worked out completely. So far the chief work has been on the spinal ganglia, and from the results there obtained we may infer analogously similar conditions to occur in the brain and spinal cord.

3. The steps of the process are shortly as follows:—

(α) Any noxious agent whatsoever which affects the vital activity of a nerve cell lowers the controlling influence which it normally exercises on the endothelial or connective tissue cells around it, with the result that on the one hand the nerve cell begins to exhibit internal degenerative changes; while on the other the satellite cells, as they have been termed, increase in size and proliferate. The nerve cell and its satellites are in this stage in a state of irritability.

(β) If the nerve cell under the toxic influence becomes completely degenerated and destroyed, then certain of the proliferated cells whose origin can only, as yet, be declared to be mesodermic, assume the rôle of phagocytes, and in this they are assisted by true phagocytic leucocytes attracted by the chemical changes resulting from decay of the nerve cell.

(γ) These phagocytes, whatever their source may be, penetrate and absorb the dead nerve cells. The spaces left after their absorption and disappearance are filled by cellular and fibrillary proliferation of the neurogliar tissue.

Abstracts

PHYSIOLOGY.

THE FORM AND MAGNITUDE OF THE ELECTRICAL RESPONSE OF THE EYE TO STIMULATION BY LIGHT AT VARIOUS INTENSITIES.

(462) **THE FORM AND MAGNITUDE OF THE ELECTRICAL RESPONSE OF THE EYE TO STIMULATION BY LIGHT AT VARIOUS INTENSITIES.** EINTHOVEN and JOLLY, *Quart. Journ of Exper. Physiol.*, 1908, Vol. i., p. 373.

THE authors used the string galvanometer to investigate the electrical response of the frog's eye to light stimuli of known wavelength. The curve of the retinal reaction to very bright, and to very weak, light was studied.

The reaction curve obtained was complicated, and seemed to point to the occurrence in the eye of three separate processes, each of which might be dependent on a separate substance.

The first substance reacted more rapidly than the other two. On lighting it developed a negative, and on darkening a positive, potential difference. Its action came strongly into prominence in a light eye, and appeared almost unmixed on sudden darkening of short duration. The second substance reacted less rapidly and in an opposite sense to the first. Its action appeared almost unmixed in a dark eye illuminated for a short time with weak light. The third substance reacted in the same sense as the second, but more slowly. Its action failed in a completely light eye, and also in a dark eye illuminated weakly for a short time.

The latent period of the reaction lay between 0·01 and 2 seconds, and was highly dependent on the strength of the stimulus.

T. GRAHAM BROWN.

PATHOLOGY.

(463) **CLINICAL AND ANATOMO-PATHOLOGICAL CONTRIBUTION TO THE KNOWLEDGE OF LOBAR ATROPHIC SCLEROSIS OF THE BRAIN.** (**Klinische und pathologisch-anatomischer Beitrag zur Kenntniss der lobären atrophischen Hirnsclerose.**) ZINGERLE, *D. Ztsch. f. Nervenheilk.,* 1909, Bd. 36, S. 440.

THE case was one of mental feebleness and epileptic insanity in a man of thirty-eight. The patient died of pulmonary mischief. Post-mortem examination revealed an atrophic sclerosis of the brain, most marked in the gyri of the left frontal lobe, but also present to a lesser degree in other parts of the cerebrum and cerebellum. Various developmental defects were also present in the brain-stem. The microscopic appearances are exhaustively discussed and are hardly suitable for condensation in an abstract. The blood-vessels were relatively little altered and free from inflammatory appearances, showing simply the conditions common to chronic degenerative processes in the brain. PURVES STEWART.

ON THE PATHOLOGICAL ANATOMY OF SENILE DEMENTIA.

(464) **(Zur pathologischen Anatomie der Dementia senilis.)** E. FANKHAUSER (of Bern), *Monatsschr. f. Psychiat. u. Neurol.*, Feb. 1909.

THE author reports the history and anatomical findings in the case of a woman who died at the age of 101. At the age of seventy-five she began to show a tendency to depression, when ninety she began to show more marked evidence of mental disorder, after a fracture of the neck of the femur at ninety-six there developed quickly the picture of advanced senile dementia.

The brain weighed 945 g. Microscopical examination of the brain disclosed very typical, advanced senile changes—fatty degeneration of the ganglion cells, tortuosity of the dendrites, disintegration of the Nissl bodies and rarefaction of the cells, neuronophagy, proliferation of the glia, marked deposit of corpora amylacea in the outermost neuroglia layer, deposit of fat in the glia cells, diminution of the tangential fibres, hyaline and fatty degeneration of the vessels. There were numerous rod-shaped cells found in the cortex. The author refers to a similar case examined by Dupré and Devaux.

With regard to the correlation of the anatomical data with the clinical facts he takes a very sound position ; we do not know the basis of the senile disorders ; the anatomical changes characteristic of the senile brain may be found in individuals who have shown no psychosis ; no thoroughgoing distinction can be made between the brain of an insane senile and a sane individual of the same age. Attempts have been made to use the brain weight as a standard of the regressive anatomical changes ; frequently important considerations have been neglected, such as the relation of the brain weight to that of the whole individual. The author, on the basis of rather limited material, found that the average weight of the brain of the senile dement is less than that of the sane individual of the same age.

The aged may be grouped into four classes : (1) Those who neither clinically nor anatomically show marked senile changes ; (2) those who are still efficient and productive along old lines demanding considerable intelligence, but who show a certain degree of memory defect and other senile changes ; (3) senile individuals with quiet progressive dementia, such as are met in almshouses ; (4) individuals presenting in addition to the defect symptoms a variety of psychotic symptoms. The pathological anatomy of senile dementia has thrown little light as yet on the questions raised by these groups. C. MACFIE CAMPBELL.

THE CONDITION OF THE BRAIN IN ACUTE INFECTIOUS
(465) **DISEASES (Über das Verhalten des Gehirns bei akuten Infektionskrankheiten.)** E. FRAENKEL, *Virchow's Archiv*, Beiheft zum 194 Bd., 1908, p. 168.

FRAENKEL made a bacteriological and histological examination of the brain in 85 cases of infectious disease in which were included infections due to staphylococci, streptococci, pneumococci and B. coli, as well as typhoid fever and diphtheria. In about three-quarters of all the cases due to pyogenic microbes there was an invasion of the brain by the causal organism. This was most marked in the streptococcal infections, less so in those due to staphylococci and pneumococci. The streptococci were always intra-vascular, never free in the tissues of the meninges or the brain. The vessels showed a swelling of the endothelium and an accumulation of leucocytes and fibrin in their lumen. Small hæmorrhages in the pia mater and localised meningitic processes were also occasionally present. In only one out of six typhoid cases were the typhoid bacilli found in the brain. Histological changes were also rare in the typhoid cases, no thrombi nor small hæmorrhages being found. In only one case was there a circumscribed meningitis. Fraenkel does not agree with Silberberg, who thinks that typhoid bacilli often occur in the cerebro-spinal fluid during the disease (*v. Rev. of Neurology*, 1908, p. 597). The dissemination of typhoid bacilli throughout the different organs of the body makes their rarity in the central nervous system all the more surprising. Fraenkel suggests that this rarity is due to the brain containing substances inimical to their growth. In no case of diphtheria was the specific organism found in the brain. This result was to be expected, for invasion of the tissues remote from the primary lesion by diphtheria bacilli is most exceptional. J. D. ROLLESTON.

CLINICAL NEUROLOGY.

PARAMYOCLONUS MULTIPLEX (FRIEDREICH). E. M. VAN
(466) BUSKIRK and ALFRED KANE, *Med. Rec.*, Feb. 20, 1909.

THE case is reported of a woman, aged 23 years, who, six months after typhoid fever in the latter part of 1906, was suddenly awakened in the night by violent convulsive seizures. These seizures were of the nature of rapid clonic spasms. The spasms gradually became less in number and milder, and she was comparatively free from them in about two months. They returned again in September 1907 with the same severity, and subsided in about six weeks. When seen by the writer in February 1908 she was having very rapid clonic spasms of the muscles of the body, arms, and thighs. The contractions numbered about 100 per minute, and involved principally whole groups of muscles of the shoulders and pelvic girdles. She had a number of severe attacks during March, after which she had none until July 1908. From the beginning of September until October 24, 1908, she has had only two mild seizures, and her general condition has greatly improved.

The spasms come on without warning usually, but have been preceded by mental excitement. When the patient's attention is diverted in any way the twitchings are lessened, and except at the onset of the condition no attacks have occurred during sleep.

D. K. HENDERSON.

THE SENSORY SYSTEM OF THE FACIAL NERVE. J. RAMSAY (467) HUNT (New York), *Journ. Nerv. and Ment. Dis.*, June 1909, p. 321.

THE author reviews his contributions to the sensory symptomatology of the facial nerve: "On Herpetic Inflammations of the Geniculate Ganglion, a New Syndrome and its Complications," *Journ. Nerv. and Ment. Dis.*, Feb. 1907; "A Further Contribution to the Herpetic Inflammations of the Geniculate Ganglion," *Amer. Journ. Med. Sc.*, Aug. 1908; "Otalgia considered as an Affection of the 7th Cranial Nerve," *Arch. of Otol.*, July 1908.

The facial nerve has been regarded as a mixed nerve by anatomists and embryologists for a decade or more, and as having a sensory root and ganglion similar in structure and function to the sensory ganglia of the spinal nerves and those of the mixed cranial nerves. This ganglion is called the geniculate ganglion, or the intumescentia ganglioformis, situated in the depths of the internal auditory canal at the entrance to the aqueduct of Fallopius, at which point the trunk of the facial nerve makes a sharp bend. The sensory root of this ganglion is the *pars intermedia* of Wrisberg, which lies between the facial proper and the auditory nerve. The nerve of Wrisberg enters the substance of the medulla between the roots of the 7th and 8th nerves, and passes to the fasciculus solitarius, having the same mode of termination as the sensory roots of the glosso-pharyngeal and the vagus nerves. On the distal side of the geniculate ganglion sensory fibres pass into the *great superficial petrosal* nerve to Meckel's ganglion, which is situated on the 2nd division of the 5th, and which gives off in its course fibres which enter into the formation of the tympanic plexus through the *great deep petrosal* nerve; sensory fibres also pass in the small *superficial* *petrosal* nerve to the otic ganglion on the 3rd division of the 5th, this nerve also sending fibres which enter into the formation of the tympanic plexus through the *small deep petrosal* nerve.

Other sensory fibres also course with the motor trunk of the facial in the aqueduct of Fallopius. These are of two kinds: the one composed of fibres which pass in the chorda tympani to the anterior two-thirds of the tongue and subserve the function of the sense of taste; the other consisting of fibres of general sensation of geniculate origin, however, which emerge with the trunk of the facial at the stylomastoid foramen, and pass to the external surface and interior of the auricle. The geniculate ganglion (zoster zone of the geniculate), therefore, has a splanchnic distribution within the cavity of the mouth and middle ear and a somatic distribution on the external ear.

In the lower structural types the sensory system of the facial nerve exceeds in importance its motor function. But in the course of phylogenic development its sensory system has diminished in extent and its motor system has increased, so that in man the splanchnic distribution within the buccal cavity (exclusive of the taste function) must be regarded as more or less vestigial. But there still exists an important sensory distribution of facial origin within the middle ear, including its prolongations into the mastoid cells and eustachian tube, as well as on the external ear.

There are also anastomotic filaments which pass from the geniculate ganglion to the auditory nerve at its termination (internal ear), so that in man, save for a vestigial remnant of general sensation and the chorda tympani within the mouth cavity, the sensory system of the facial is confined to the innervation of the auditory mechanism. In order to simplify the complicated anatomical nomenclature of this region, for purposes of clinical descriptions, the author suggests the following reconstruction:—

The facial or 7th cranial nerve is composed of two roots, a motor and a sensory, which unite at the level of the geniculate ganglion. On the distal side of the ganglion the nerve is divided into three branches or divisions, analogous to the terminology which has been assigned to the trigeminus on the distal side of its ganglion.

Peripheral Divisions of the 7th Nerve.

First Division: the great superficial petrosal nerve, passing to Meckel's ganglion, and giving off in its course a tympanic branch.

Second Division: the small superficial petrosal nerve, passing to the otic ganglion, and giving off in its course a tympanic branch.

Third Division: includes the motor trunk, the chorda tympani and the sensory fibres destined for the external ear. Around this third division is grouped the well-known symptomatology of Bell's palsy.

Such a reconstruction of the facial system, while perhaps not serving the purposes of the anatomist, who divides the branches of the facial according to their relations to the temporal bone into intra- and extra-petrous, would serve as a practical basis for clinical descriptions, and would give to the sensory mechanism of this nerve the importance which it deserves.

That the facial nerve should stand in a close sensory relation to the structures of the auditory mechanism is not surprising, when one considers that this nerve is a branchial nerve, and throughout the whole course of phylogenic development stands in close relation to the first branchial cleft and its adjacent visceral arches, more especially the posterior or the hyoid arch. From this cleft and adjacent arches are developed the structures of the middle and external ear. ·

Another developmental factor bearing on the close relationship of this nerve to the auditory mechanism is found in its relationship to the auditory ganglia, from which are developed the *cochlear* and *vestibular* divisions of the auditory nerve. The acoustic ganglia and the geniculate are derived primarily from the *neural ridge*, and in the earlier stages of embryonic life are grouped together into a common ganglionic mass, the ganglion *acousticum-faciale.* And it is only in the later stages of embryonic life that they become differentiated into the geniculate, from which are derived the fibres of the sensory root of the facial, the ganglion *spirale* which gives rise to the fibres of the cochlear nerve, and the ganglion of *Scarpa*, which gives rise to the fibres of the vestibular nerve. So that both in the development of the neural, as well as in the other structures of the auditory mechanism, embryological investigations have shown a most intimate relationship between the facial nerve and the *internal, middle* and *external* ear. That the sensory function of the facial nerve in its relationship to the auditory mechanism has escaped detection is to be ascribed to the very complex and intricate anatomy of this region. The trigeminus, glosso-pharyngeal, vagus and the upper cervical nerves all converge and anastomose in the *ear cleft*, but I would particularly emphasize the fact that the facial nerve plays a central and important part in the innervation of this region.

Sensory Symptoms and Syndromes.

The herpetic inflammations of the geniculate ganglion. — As the geniculate ganglion is composed of the so-called *spinal type* of cells, similar to those of the spinal, Gasserian, glossopharyngeal and the vagus ganglia, it may in common with these ganglia be the seat of the specific inflammations of herpes zoster. With this ganglion involvement there occur pre- and post-herpetic pains in the depths of the ear, mastoid and in the auricle (*herpetic otalgia*). The herpetic eruption appears on the auricle and auditory canal (*herpes oticus*). The exact boundaries of the zoster zone for the geniculate have not as yet been definitely established; but according to the author's investigations it would correspond to the following landmarks on the ear: external meatus, concha, tragus, antitragus, antihelix, fossa of the antihelix, and the lobule. It is not improbable that the geniculate is represented as well on the postero-mesial surface of the auricle and adjacent mastoid region

Attention is also directed to the occasional occurrence of an herpetic eruption in conjunction with facial palsy, situated on the anterior two-thirds of the tongue and peritonsillar region; and as the geniculate has a vestigial innervation within the mouth cavity, it is possible that these eruptions also are to be referred to the geniculate ganglion.

Herpetic inflammations of the geniculate ganglion are not infrequently complicated by peripheral facial palsy, the occurrence of which is to be explained by an extension of the inflammatory process to the adjacent motor fibres of the facial nerve (*herpes oticus* with *facial palsy*).

In addition to the occurrence of facial palsy, acoustic complications are a not infrequent accompaniment of herpes oticus. These vary in degree from a slight diminution of hearing (hypoacousis) to the severe forms of Meniere's syndrome, tinnitus aurium, deafness, nystagmus, nausea, vomiting and disturbances of the equilibrium (herpes oticus with facial palsy and auditory symptoms).

The fusion of these three clinical types constitutes a well-defined syndrome. The author refers these auditory complications either to a direct extension of the inflammatory process to the adjacent auditory nerve or to a primary herpetic involvement of the acoustic ganglia themselves (ganglion *spirale* and the ganglion of *Scarpa*).

A sub-group of this syndrome also occurs, in which facial palsy and auditory symptoms occur with an eruption of herpes zoster, which is confined to the zoster zones for the Gasserian ganglion (herpes facialis), or the upper cervical ganglia (herpes occipito-collaris). The occurrence of facial palsy and auditory symptoms in conjunction with *herpes facialis* and *herpes occipito-collaris*, the geniculate zone being free, is to be explained on the basis of *multiple involvement* of the ganglia in zona, the chief or eruptive focus being situated in the Gasserian or cervical ganglia, while at the same time an inflammatory reaction is present in the geniculate, which does not produce an eruption, but which is sufficient to implicate the adjacent motor fibres of the facial nerve. The auditory symptoms in conjunction with herpes facialis and herpes occipito-collaris are to be referred to an inflammatory reaction of the same nature in the acoustic ganglion.

Neuralgic Affections of the Facial Nerve (Otalgia).

We have already seen that the sensory system of the facial nerve occupies a central and an essential part in the innervation of the auditory mechanism. And when one considers the very sensitive structure of the auditory mechanism, and its exposed situation through the auditory canal and eustachian tube, it is not surprising that neuralgic affections of this system are of frequent occurrence.

Pure otalgia is therefore to be regarded as a neuralgic affection of the sensory system of the 7th cranial nerve, and is characterised by the occurrence of neuralgic pain in the depths of the ear, the mastoid region and in the auricle. A Valleix tender point is occasionally noted in front of the tragus. Various clinical types may be recognised.

1. *A primary or idiopathic otalgia* (tic douloureux of the ear).
2. *Reflex otalgia.*—In this group of cases sharply circumscribed pains in the auditory mechanism occur in conjunction with ulcerative affections within the buccal cavity and nasopharynx in the distribution of the 2nd and 3rd divisions of the 5th nerve. This group may be regarded as a *referred visceral pain.* The focus of irritation is situated in the trigeminal area which is reflected through the great and the small superficial petrosal nerves to the geniculate.
3. *Secondary otalgia.*—In this group, pains following herpetic inflammations (herpetic otalgia) and the involvement of the geniculate from without (tumour growths).
4. *Tabetic otalgia.*—In the course of tabes dorsalis sharply circumscribed lancinating pains may occur in the depths of the auditory mechanism. The author has observed five cases of this character, in one of which degenerative changes were demonstrated in the pars intermedia of Wrisberg.

Attention is also directed to the possible surgical importance of neuralgic affections of the facial nerve; and in the event of other measures failing, operative intervention may be considered, similar to those which have been utilised in the treatment of obstinate neuralgia of the face (nerve stretching, alcohol injections, ganglion extirpation and section of the posterior root).

The Sensory Mechanism of the Facial Nerve as a Reflex Factor in the Production of Facial Spasms and Twitchings.

We have seen that the sensory system of the facial nerve has the following distribution:—coursing with the motor root at the base of the brain and in the internal auditory canal; branches to the terminal division of the acoustic (internal ear), the middle ear, eustachian tube and the mastoid cells through the petrosal nerves and with the trunk of the 7th in the Fallopian aqueduct; so that in dynamic or structural lesions the stimuli would be conveyed directly to the nucleus of the 7th nerve, the result of these afferent irritative stimuli being peripheral motor discharges of a nuclear character, peripheral facial spasms, twitchings and myokymia. The recognition of the influence of the sensory facial in the production of these spasms has a practical importance, indicating the careful treatment of local affections of the auditory mechanism.

Sensory Symptoms occurring in the Course of Facial Neuritis.

In the so-called rheumatic facial neuritis, sensory symptoms are of frequent occurrence. In the experience of the writer, *pain* is of almost constant occurrence, being absent in only two of thirty consecutive cases. This pain is situated in the depths of the ear, the mastoid or upon the auricle, and may precede, and often follows, the appearance of palsy. In severe cases the pain radiates to the face and occipito-cervical region.

The author has been able to demonstrate in nine of thirty consecutive cases a distinct area of hypæsthesia in the *concha auris*. In one case there was increased sensitiveness of the concha, and in two cases the aural reflex produced by touching the entrance to the external meatus was absent. It is to be emphasized that this area of hypæsthesia corresponds to the zoster zone for the geniculate ganglion.

In conclusion, the author expresses his belief that the sensory symptomatology of the 7th cranial nerve deserves an established place in the *nomenclature*, and that this sensory system, although small in area, is of great importance because of its relation to the highly developed and very sensitive auditory mechanism.

AUTHOR'S ABSTRACT.

ON LANCINATING PAINS IN THE REGION OF THE HEAD (468) IN TABES DORSALIS. (Ueber lanzinierende Schmerzen im Bereiche des Kopfes bei Tabes dorsalis.) A. LANG, *Wien. klin. Wchnschr.*, Oct. 15, 1908.

LANCINATING pains in the region of the head may be prominent in tabes with cervical or bulbar distribution; the diagnosis of neuralgia is often made in such cases. As a differential point the author emphasizes the fact that in the tabetic pseudo-neuralgia the nerve stems corresponding to the painful area show diminished sensitiveness to pressure, and that in such an area there are usually marked disorders of sensibility. Neuralgiform pains in the region of the trigeminus are frequently accompanied by pains in the distribution of the occipital nerve. The usual anti-neuralgic therapeutic measures fail to relieve the tabetic pseudo-neuralgia.

C. MACFIE CAMPBELL.

THE RE-EDUCATIONAL TREATMENT OF LOCOMOTOR (469) ATAXIA.

J. Ralph Jacoby, *Med. Rec.*, May 8, 1909.

The article is a review of the treatment carried on by Dr Frenkel at Heiden in Switzerland. The ataxia in tabes is held to be due to sensory disturbances in the muscles and joints, and the object of this method of treatment is not to strengthen the muscles by gymnastic apparatus, but to educate them. The main reason urged against the use of severe exercises or of apparatus is because in hypotonic conditions the muscles are apt to be over-taxed beyond repair. Six cases are reported, and the writer concludes that the greater the ataxia the more benefit there is to be derived from this line of treatment, while in hypotonia of the muscles the prognosis is rather poor. D. K. Henderson.

ON POSITIVE WASSERMANN REACTION IN NON-SYPHILITIC (470) DISORDERS. (Ueber positive Wassermann—Neisser A.—Brucksche Reaktion bei nichtluetischen Erkrankungen.)

E. Weil and H. Braun, *Wien. klin. Wchnschr.*, June 25, 1908.

Out of twelve cases of catarrhal pneumonia four gave a positive Wassermann reaction ; in none of the four was there the slightest ground for the assumption of previous syphilitic infection. Three cases had severe attacks of pneumonia. Out of twenty cases of typhoid three severe cases gave a positive Wassermann reaction ; no evidence of syphilis was present in these cases. Out of fourteen non-syphilitic brain tumours four cases gave positive reaction. In four cases of diabetes one gave a positive result.

The authors conclude that a positive Wassermann reaction is not satisfactory evidence of previous syphilitic infection, unless one can exclude a variety of other conditions such as these mentioned above.

C. Macfie Campbell.

SERUM DIAGNOSIS OF SYPHILIS.

(471) F. P. Gay and J. G. Fitzgerald, *Boston Med. and Surg. Journ.*, Vol. clx., No. 6.

The paper deals with a comparison of certain recent methods which have been offered for the diagnosis of syphilis. The Wassermann, Noguchi, and the author's modification of the Noguchi method are briefly explained. D. K. Henderson.

SPINAL TUMOURS.

(472) John Owen, *Liverpool Med.-Chir. Journ.*, July 1909.

Cases of spinal tumours in various situations were alluded to, two being briefly narrated. Surgical intervention in one instance resulted in cure; from a condition of complete and absolute paraplegia, with incontinence of urine and fæces and acute bedsore, the patient, a labourer of 38 years of age, was enabled to walk about well in less than three months after operation.

The early symptom was pain definitely localised to the right costal margin in the anterior axillary line. Some months later the right leg became clumsy, and on examination the Brown-Sequard syndrome was revealed—sensory impairment of the left leg with motor impairment of the right. While in hospital a condition of absolute paraplegia with sensory defect of both lower limbs supervened.

Laminectomy disclosed an encapsuled intra-meningeal tumour springing from the right eighth dorsal nerve root. This was excised, with the satisfactory result recorded above.

Another case alluded to was that of an adult male, presenting symptoms of costal and epigastric pain of two years' duration, with a zone of hyperæsthesia and sensory impairment below; subsequently paraplegia and sphincter defect gradually developed.

An intramedullary tumour at the level of the sixth and seventh dorsal roots was removed, some improvement in symptoms ensuing.

The pathological nature and localisation of these tumours was discussed, and reference was made to the common error of locating the lesion at too low a level.

In the differential diagnosis, from the primary diseases of the spinal cord, steadily progressive paraplegia with anæsthesia, indicating a gradual invasion of a transverse section of the cord, should be relied upon, and when persistent unilateral root pains with a hyperæsthetic zone are superadded the diagnosis becomes almost certain.

Reference was made to some cases of pachymeningitis, a condition Horsley has succeeded in relieving by operation; diffuseness of the hyperæsthesia and pain is their characteristic feature.

Difficulty of diagnosis in anomalous cases was commented upon, and emphasis was laid upon the importance of determining the cause in every case of paraplegia. AUTHOR'S ABSTRACT.

OPERATION FOR REMOVAL OF INTRASPINAL TUMOUR.

(473) D. DOUGLAS-CRAWFORD, *Liverpool Med.-Chir. Journ.*, July 1909, p. 315.

THE first part of the paper deals with the literature of the subject and an analysis of the cases operated upon. The greater number of tumours were located in the dorsal region, and were intradural in position, springing either from the meninges, the nerve sheath, or the cord.

Our patient was a male, 37 years old. He was submitted to operation ten months after the appearance of symptoms, and at that time was completely paraplegic, and had incontinence of urine and fæces. The patient was anæsthetised in the prone position, chloroform and, later, ether being administered. The operation was completed in one stage. The incision extended from the fifth dorsal to tenth dorsal spine. Hæmorrhage was arrested with forceps, and gauze soaked in hot saline solution. The tumour took origin from the sheath of the right eighth dorsal nerve, and extended on to the posterior and lateral surfaces of the cord. It was fairly easily removed. The dura was partially closed by two catgut sutures, the muscles sutured with catgut (chromicised) and the skin with silkworm. No drainage was employed.

During the first few days the patient suffered from severe painful muscular cramp in his lower limbs, especially if one leg touched the other.

On the second day after operation he was able to move his toes. On the eighth day control of his bladder returned, probably hastened by the administration of belladonna. He was able to stand a month after operation, and now has but a slight spastic condition of the right leg to suggest his former condition.

The tumour is trilobed and completely encapsuled. It appears to be of a fibro-sarcomatous nature: the fibrous tissue is abundant. Scattered throughout the section are numbers of blood spaces, some being of considerable size. AUTHOR'S ABSTRACT.

CLINICAL CONTRIBUTIONS TO THE STUDY OF SYRINGOMYELIA AND HÆMATOMYELIA. (474) (Klinische Beiträge zur Kenntniss der Syringomyelie und Hämatomyelie.)

PETREN, *D. Ztsch. f. Nervenheilk.*, 1909, Bd. 36, S. 400.

THE first case recorded was one of syringomyelia of pure spastic type, with symptoms almost exclusively unilateral, the course of the disease having lasted at least thirty-four years. The patient was a man of forty-eight, who had a characteristic dissociated anæsthesia of syringomyelic type in the left upper limb and corresponding fore-quarter of the trunk, extending upwards to the left side of the neck, face, and scalp. There was no muscular atrophy of the muscles of the upper limb, but the left sternomastoid was atrophied. Both lower limbs were spastic, especially on the left side. Other bulbar symptoms on the left side included unilateral paralysis of the palate and vocal cord. All these signs and symptoms could only be explained by syringomyelia and syringobulbia limited to the left side. The only muscles atrophied were those supplied by the spinal accessory and lower roots of the vagus. Petren discusses the exact extent of the syringomyelic process in the cord and medulla, and from the unusual extent of rigidity in the left lower limb as compared with the upper limb he considers that there must be a second lesion in the pyramidal tract below the cervical region. The lower limit of the sensory disorder on the trunk leads him to locate this second lesion not lower than the upper thoracic region of the cord. He proceeds to discuss the probable spinal paths of tactile, temperature, pain and muscle-sense in the cord.

The second case was one which presented symptoms of syringomyelia, but where certain circumstances, especially the course of the disease, pointed to a co-existing syphilitic affection.

The symptoms commenced with violent sacral pain and subjective sensation of numbness. Then a spastic paresis developed, confined to the lower limbs, with slight ataxia and definite diminution of all cutaneous sensations, more marked at the periphery of the limbs. The plantar reflexes, however, were normal and the left knee-jerk was diminished. There was no definite spasticity of the limbs. Petren excludes disseminated sclerosis by the absence of other evidences of disease elsewhere in the central nervous system. In favour of syringomyelia was the presence of spinal deformity, though this was a kyphosis, not the common scoliosis of syringomyelia. As the case progressed there appeared an atrophic palsy of the left hand and the appearance of diminution to pain in the upper limbs. The disease showed marked remissions, and these remissions coincided with the periods when he was under antisyphilitic treatment. The cerebro-spinal fluid does not appear to have been examined.

The third case is one of probable traumatic hæmatomyelia which arose after a single violent bloodless stretching of the sciatic nerve undertaken on account of sciatica. The patient had the right lower limb forcibly flexed at the hip with the knee extended. The limb at once felt weak and numb, but the pain ceased. More than a year later hyperæsthesia of the foot on the affected side appeared and a spontaneous ulcer appeared on the lateral border of the foot. Some three years later the small toe was removed on account of a supposed causal connection with the ulcer, which sometimes healed up, sometimes broke down. There was diminution of sensibility in the 4th and 5th lumbar and 1st and 2nd sacral segments of the right lower limb, more marked in the case of pain and temperature than in the case of tactile sense. The right knee-jerk was diminished and the right ankle-jerk absent. PURVES STEWART.

EPISTAXIS IN CEREBRO-SPINAL MENINGITIS. (Les épistaxis (475) dans la méningite cérébro-spinale.) L. RIMBAUD, *Gaz. des Hôp.*, 1909, p. 905.

A RECORD of four cases of epidemic cerebro-spinal meningitis in which abundant epistaxis was followed by immediate improvement and complete recovery. Of 8 other cases in the same epidemic which had no epistaxis, 3 died. The beneficial effect of the epistaxis is attributed partly to the elimination of the meningococci and their toxines, and partly to the relief of meningeal congestion.

J. D. ROLLESTON.

THE PRECIPITO-REACTION OF VINCENT IN CEREBRO-SPINAL MENINGITIS.

(476) **(Sur le précipito-réaction de Vincent dans la méningite cérébro-spinale.)** J. LOUIS, *C. R. de la Soc. de Biol.*, T. 66, 1909, p. 814.

LOUIS employed Vincent's test in seven cases in which infection with Weichselbaum's diplococcus seemed probable. Three in whom the reaction was negative subsequently proved to be cases of tuberculous meningitis. In the other four, whose cerebro-spinal fluid showed meningococci, the reaction was positive. J. D. ROLLESTON.

ABORTIVE CEREBRO-SPINAL MENINGITIS WITH CLEAR FLUID AND ABSENCE OF MENINGOCOCCI. THEIR DEMONSTRATION BY VINCENT'S REACTION.

(477) **(Des méningites cérébro-spinales abortives, à liquide clair, sans méningocoques. Leur démonstration par la réaction de Vincent.)** SALEBERT and J. LOUIS, *Bull. et mém. de la Soc. méd. des Hôp.*, xxvii., 1909, p. 1226.

A SOLDIER was suddenly seized with headache and shivering, and a few days later presented hyperæsthesia of the eyeballs, nuchal rigidity and Kernig's sign. Two vesicles of herpes appeared on the lower lip. Temperature 101°. No serum being available, the patient was treated with hot baths. Recovery took place within a fortnight of the onset. The cerebro-spinal fluid examined on the fourth and fifth days showed mononuclears almost exclusively, and on two occasions yielded a positive Vincent's reaction. The diagnosis was confirmed by the presence of meningococci in the pharyngeal mucus and a positive agglutination test.

J. D. ROLLESTON.

CLEAR CEREBRO-SPINAL FLUID IN CEREBRO-SPINAL MENINGITIS.

(478) **(Liquide céphalo-rachidien limpide au cours des méningites cérébro-spinales.)** A. NETTER and R. DEBRÉ, *C. R. de la Soc. de Biol.*, T. 66, 1909, pp. 866 and 1009.

THE cerebro-spinal fluid may be clear both at an early and at a late stage of the disease. Thus in three out of four patients punctured during the first twenty-four hours the fluid was clear, rich in meningococci, but poor in cells, which were mainly lymphocytes. In 6 out of 11 cases punctured between the sixteenth and seventy-fifth days a clear fluid was obtained which showed a predominance of mononuclears. Out of 49 cases punctured between the second and fourteenth days the fluid was purulent or decidedly turbid in 96 per cent. These figures suggest that the cerebro-spinal fluid in epidemic cerebro-spinal meningitis usually passes through an intermediate purulent stage, but cases may possibly exist in which the fluid is clear throughout. J. D. ROLLESTON.

CEREBRO-SPINAL MENINGITIS WITH CEREBRO-SPINAL FLUID RICH IN MICRO-ORGANISMS AND ABSENCE OF LEUCOCYTES.

(479) **(Meningite cerebro-spinale con liquido cefalo-rachidiano ricco di microbi e senza leucociti.)** A. CARDUCCI, *Il Policlinico*, Sez. Prat. Anno xvi., 1909, p. 645.

CARDUCCI records a fatal case of influenzal meningitis in a boy, aged 12 years, in whom lumbar puncture gave issue to a clear fluid without hypertension showing numerous bacilli and a complete absence of leucocytes. At the autopsy diffuse purulent cerebro-spinal meningitis was found. The absence of leucocytosis is attributed to the character of the exudation, which was so tenacious that the cerebro-spinal fluid did not mix with it. The writer concludes that the presence of a clear fluid in meningitis does not always justify the diagnosis of a tuberculous form. Bacteriological examination should always be made for the causative organisms. J. D. ROLLESTON.

FAILURE OF DIPHTHERITIC ANTITOXIN IN THE TREATMENT OF EPIDEMIC CEREBRO-SPINAL MENINGITIS.

(480) **(Inefficacité du sérum antidiphtérique dans le traitement de la méningite cérébro-spinale epidémique.)** NETTER, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 59.

NETTER has collected from literature 121 cases of epidemic cerebro-spinal meningitis which had been treated by injection of diphtheritic antitoxin. Among ninety-two cases in which the issue was recorded there were seventy-six deaths. He concludes that the substitution of diphtheritic antitoxin for anti-meningococcic serum in the treatment of epidemic cerebro-spinal meningitis is a reckless waste and deprives the patient of the remedy most likely to be successful. J. D. ROLLESTON.

SIXTY-SEVEN CASES OF CEREBRO-SPINAL MENINGITIS (481) TREATED BY ANTI-MENINGOCOCCIC SERUM. (Soixante-sept cas de méningite cérébro-spinale traités par la sérothérapie antiméningococcique.)

A. Netter and R. Debré, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 56.

Netter has treated 67 cases with 16 deaths—a mortality of 23·8 per cent., which falls to 15 per cent. on subtraction of the cases who were moribund at the time of the first injection and of those in whom death was due to other causes than meningitis. Fifty cases were treated exclusively by Flexner's serum, among whom 9 deaths only occurred—a mortality of 18·0, which, after deduction, falls to 8·89 per cent. Of 7 cases less than one year old, 3 died; of 8 between one and two, 1; of 11 between two and five, 2; and of 7 between ten and fifteen, 1; while of 4 over fifteen all recovered. The reduced mortality among the children under two years, who formed nearly a third of all his cases, was 15·4 per cent., and among the rest 5·8 per cent.

J. D. Rolleston.

A COMPARISON OF THE DIFFERENT ANTI-MENINGOCOCCIC (482) SERUMS. (Action comparée des différents sérums anti-méningitiques.)

J. Comby, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 52.

Dopter's and Flexner's serums yield excellent results, and are of equal value. Kolle's preparation is unsatisfactory.

J. D. Rolleston.

SERUM RASHES FOLLOWING INTRASPINAL INJECTION OF (483) ANTI-MENINGOCOCCIC SERUM. (Les éruptions sériques après injections intrarachidiennes de sérum antiméningococcique.)

Netter and Debré, *C. R. de la Soc. de Biol.*, T. 66, 1909, p. 976.

The frequency and date of appearance of serum rashes after intraspinal injection are just the same as after subcutaneous administration, as the writers prove by quoting Currie's figures in the Glasgow epidemic (v. *Review*, 1909, p. 27), in which the subcutaneous method was mainly employed. The superiority of the intraspinal method is shown by the fact that the mortality of Netter's cases in which the intraspinal method only was adopted was 22 per cent., as compared with a mortality of 64·7 per cent. in the Glasgow epidemic.

J. D. Rolleston.

NOTES UPON FOURTEEN CASES OF INTRA-CRANIAL (484) DISEASE COMPLICATING MIDDLE-EAR SUPPURATION.

A. LOGAN TURNER, *Journ. of Laryngol.*, xxiv., 1909, 361.

THESE fourteen cases were observed in the Ear and Throat department of the Royal Infirmary, Edinburgh, out of a total of 532 cases of middle-ear suppuration examined during the year 1908. Three cases, or 2·3 per cent., complicating acute; eleven, or 2·7 per cent., complicating chronic middle-ear suppuration.

In nine cases only one complication occurred—namely, sigmoid sinus thrombosis in four, lepto-meningitis in four cases, and cerebellar abscess in one case. In the remaining five cases sinus thrombosis along with lepto-meningitis occurred in three, meningitis and temporo-sphenoidal abscess in one, and sinus thrombosis and cerebellar abscess in one.

Ten of the patients were males and four were females. Thirteen were affected between the ages ten and thirty.

Optic neuritis was not present in any case. Changes in the disc are by no means of constant occurrence in connection with the development of intracranial affections complicating middle-ear suppuration.

The leading symptoms in the cases of sigmoid sinus thrombosis were those usually recognised as significant of that condition. One or more typical rigors with swinging temperature characterised each. In one case a miner was admitted suffering from severe pain in the ear and with a history of having had a rigor immediately previous to admission. The mastoid cells were opened; the wall of the sigmoid sinus appeared normal. Twenty-two days after the first rigor a second occurred. The wound was reopened and the sinus was found to contain an organising partially adhering clot extending from the bulb to a point midway between the knee and the torcular.

Four cases of uncomplicated lepto-meningitis. Three associated with chronic middle-ear suppuration: in these the labyrinth was diseased and the infection had spread by way of the labyrinth.

All these cases were operated upon: the primary focus of the infection was thoroughly removed and meningeal drainage was practised by repeated lumbar puncture, and in one case additional drainage was attempted by opening the middle and posterior subarachnoid spaces.

Results of Treatment.—Operation was performed on all the fourteen cases of the series. Four recovered and ten died. The four successful results were obtained in uncomplicated cases of sigmoid sinus thrombosis. The case of cerebellar abscess survived for two and a half months after operation. In all the cases of sinus thrombosis the internal jugular vein was divided between two ligatures as a routine practice and the upper part of the vein and the jugular bulb syringed out.

W. G. PORTER.

SPASTIC PARALYSES WITH AN INTACT PYRAMIDAL (485) SYSTEM (INTRACORTICAL HEMIPLEGIA AND DIPLEGIA). (Spastische Lähmungen bei intakter Pyramidenbahn (intrakortikale Hemiplegie und Diplegie.)

W. SPIELMEYER, *Neurolog. Centralbl.*, Aug. 1, 1909, S. 786.

"CHRONIC diseases of the cortex which do not involve the motor projection system may cause spastic paralysis of the hemiplegic or paraplegic type." The author arrives at this conclusion from a study of two cases. The first patient was an epileptic who presented a hemiplegia characterised by rigidity, increase of the tendon jerks, ankle clonus and contractures. The corresponding hemisphere of the brain, when examined post-mortem, presented an atrophic appearance. Microscopically the cortex of this hemisphere was greatly atrophied; the large pyramidal cells, however, appeared quite healthy, and there were no degenerative changes in the pyramidal fibres either of the brain or cord. The author accounts for the hemiplegia by supposing that these cells from which the pyramidal fibres arise have been isolated from their cortical connections, and he designates the condition as intracortical hemiplegia. The second case was that of a woman aged 53, who suffered from a progressive spastic paraplegia, in whose brain a general cerebral atrophy was found after death; the large pyramidal cells of the cortex and their projection fibres were, however, intact.

EDWIN BRAMWELL.

PEDUNCULO-PONTINE HÆMORRHAGE FOLLOWING MUMPS. (486) (Hémorragie pédunculo-protubérantielle d'origine ourlienne.)

CHAVIGNY and SCHNEIDER, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 68.

A FEW days after a mild attack of mumps, which occurred during an epidemic in which the meningeal symptoms had been unusually frequent, a soldier aged 22 was seized with an ictus. On admission to hospital, in addition to right hemiplegia the left external rectus was paralysed. Shortly afterwards bilateral ptosis and total left ophthalmoplegia developed. There was no history nor evidence of syphilis, and no improvement followed intramuscular injections of biniodide of mercury. A few days before death, which took place within six weeks of the onset of mumps, meningeal symptoms supervened. Lumbar puncture gave issue to a uniformly pink fluid under hypertension showing a pure mononucleosis.

At the autopsy a hæmorrhagic focus was found in the upper part of the pons on the left side and in the corresponding cerebral peduncle.

J. D. ROLLESTON.

DISEASES OF THE CEREBRAL ARTERIES. G. A. MOLEEN, (487) *Journ. Amer. Med. Assoc.*, Vol. lii., No. 9.

ARTERIO-SCLEROSIS is especially referred to. The pathology, symptomatology, diagnosis, and treatment are discussed, and five cases are reported. D. K. HENDERSON.

A CONTRIBUTION TO NASAL EPILEPSY. (Beitrag zur nasalen (488) Epilepsie.) D. LEVENSTEIN, *Arch. f. Laryngol.*, 1909, xxii. 167.

IT is well known that epilepsy can be caused by various forms of intranasal disease, and has been cured by treatment of the nasal condition. Lannois has reported a case exactly opposed to this, in which an epileptic siezure occurred during the removal of polypi. Levenstein reports an analogous case. The patient, a man æt. 24, complained of difficulty in breathing through the nose. Polypi were found in both nostrils. These were removed from the right nostril. Immediately afterwards the patient became unconscious, fell off the chair, and tonic and then clonic contractions of his muscles were observed. On account of this fit no further operation was performed.

Levenstein concludes from this case that nasal treatment should be avoided in neurotic individuals unless absolutely indicated. W. G. PORTER.

STATISTICAL INVESTIGATIONS ON RECOVERED EPILEPTICS. (489) (Statistische Untersuchungen über geheilte Epileptiker.) VOLLAND (of Bethel), *Allg. Ztschr. f. Psych.*, Bd. 65, Ht. 1.

OUT of 243 patients treated from 1886 to 1901, and discharged as recovered, it was possible to follow the later history in 138 cases. The author's investigations refer to later attacks, indulgence in tobacco and alcohol, marriage, health of children, conflict with the legal authorities. C. MACFIE CAMPBELL.

THE VISUAL FIELDS IN HYSTERIA. W. R. PARKER, *Journ.* (490) *Amer. Med. Assoc.*, Vol. liii., No. 2.

THE paper is the result of the clinical study of fifty cases. The author disagrees with those who assert that the most common ocular stigma in hysteria is a concentrically contracted field of vision. He sums up his results as follows :

1. Dyschromatopsia is more common than concentrically contracted fields in the ratio of 72 to 40.
2. There is no relation between the contraction of the visual

fields and amblyopia, the former being present in 96 per cent. of the cases, while the latter was found in 8 per cent.

3. There is no constant relation between areas of anæsthesia and concentrically contracted fields. Of the patients with anæsthesia, 28·4 per cent. showed concentrically contracted fields, while 75 per cent. showed dyschromatopsia.

The results are tabulated, and a photograph of the visual field in each case is attached. The discussion on the paper is also appended. D. K. HENDERSON.

MIGRAINE. An Address on the Prodromas of Migraine. Sir (491) WILLIAM GOWERS, *Brit. Med. Journ.*, June 12, 1909, p. 1400.

THE prodromas of migraine, as well as the headache, are functional sensory disturbances. With the occasional exception of a slight degree of vertigo the prodromas are limited to the senses of sight and touch.

In the latter case the arm is the usual seat, being affected by tingling, varying in intensity, which passes slowly up from below, followed by a gradually fading reduction in sensibility and some loss of power. The tingling may affect the mouth, either primarily or after ascending the arm, here involving usually the gums and tongue of one side or the lips on one or both sides.

Visual symptoms are more frequent. Hemianopsia, more or less incomplete, may occur, often associated with a luminous spectrum of the fortification figure or other type in the defective part of the field of vision.

These conditions may be constant or varying in different patients, and, when unilateral, are followed by headache, usually on the opposite side. If mesial or bilateral, the headache is similar in position as a rule.

When the prodroma is on the right side there is often an associated aphasic condition, either slight or nearly complete.

The prodroma is due to a crude disturbance of function, probably in the cerebral cortex, which ripples through the centre, leaving a state of inhibition which soon passes off. All explanatory hypotheses are unsatisfactory, the most acceptable being the theory of local vasomotor spasm.

In rare cases there may be transverse hemianopsia, possibly due to symmetrical arterial spasm of both sides, or, the spasm being unilateral, to secondary inhibition passing from the anæmic area to the corresponding area of the other side. The upper or the lower half of the visual field may be affected with loss of function and spectra, and there may be other symptoms in other parts. In some cases the hemianopsia may be sometimes lateral and sometimes transverse. Migraine may occur at any age, from childhood up to fifty years. In young children there may be pyrexia and vomiting, producing a resemblance to meningitis. In older persons the prodroma may occur with very little headache, and loss of power may be the chief symptom, presumably due to vasomotor spasm affecting the motor area.

Occasionally migraine and epilepsy occur together, and here the already existing affection usually recedes before the advance of the other. The author has met only two cases in which the prodroma of migraine developed into the aura of epilepsy. In conditions favouring the coagulation of the blood this may occur, so that the circulation in the affected area fails to become re-established, and the permanent effects of thrombosis remain.

Cases illustrating the various points are quoted, and as remedies, nitroglycerine, strychnine, bromides, migrainin and migralgin are mentioned. H. M. TRAQUAIR.

REMARKS ON TIC AND CHOREA. HUGH T. PATRICK, *Journ.* (492) *Amer. Med. Assoc.*, May 1, 1909.

THE tic described in this paper is the purely motor form. The main points of differentiation emphasized by the writer are that while movements of a tic are under volitional control, those of chorea are involuntary; movements of tic are co-ordinate and purposive, movements of chorea are inco-ordinate and purposeless. Tic is held never to occur reflexly, but is usually found to be due to some local source of irritation. In regard to treatment it is pointed out that tic is really a psychic disorder, and so, after the exciting cause has been removed, the treatment consists in trying to strengthen inhibition and to increase self-control. The relation of tic to spasmodic torticollis is considered, and it is held that the two conditions are very closely allied. D. K. HENDERSON.

(493) **ANGIONEUROSES.** A. J. WHITING, *Med. Rec.*, Jan. 2, 1909.

THE author indicates that the angioneuroses may be classified either according to the presence or absence of objective phenomena, or according as they are associated with either spasms or paresis of the blood vessels. He reports three illustrative cases and refers to the literature. Among 162 cases collected by Cassirer only twelve occurred in males, and of 184 cases 150 were between the ages of thirty and sixty. About three-quarters of the total number of those affected were washerwomen, charwomen or middle-aged females engaged in arduous work, and much exposed to varying temperatures of hot and cold water. The attacks usually occur in the early morning between four and six, they may persist throughout the day, and are much worse as a rule in cold weather. They most commonly affect the hands, more rarely the feet, and they may extend up to the elbow and shoulder. The condition sometimes persists for many years, and the most satisfactory plan of treatment is to change the patient's mode of life.

EDWIN BRAMWELL.

LOSS OF THE KNEE JERKS IN FUNCTIONAL DISEASE. (494) (Ueber funktionell bedingtes Fehlen der Patellareflexe.)

F. WOHLWILL, *Neurolog. Centralbl.*, June 1, 1909, S. 567.

THE case of a girl, aged 12, suffering from hysterical attacks, is described. The tendon jerks were absent at the first examination, but were on subsequent occasions sometimes present. There was pronounced hypotonia of the lower extremities but no loss of sensation. In the opinion of the author organic disease could be excluded, since the examination was entirely negative with the exception of the alteration in the reflexes above described, since the cerebro-spinal fluid was found to be quite normal, and, lastly, because of the anomalous condition of the reflexes themselves. Nonne and Steiner have previously pointed out that the tendon jerks may be absent in functional disease. The former has reviewed the French literature. Cases have since been described by Wigandt, Köster and von Hoesslin. In all of the five cases reported by the latter writer the tendon jerks were persistently absent. Sommer holds that persistent absence of the knee jerks in functional disease can only be explained by a co-existing organic malady or upon the supposition that a congenital anomaly exists. Wohlwill remarks that von Hoesslin's cases may belong to the former category, and refers to a case reported by the same writer in which persistent absence of the knee jerks was associated with hysterical symptoms, the patient developing signs indicative of undoubted tabes ten years later. Pathological alterations in the cerebro-spinal fluid may prove the existence of an organic affection. Finally, the author holds that the feature which distinguishes absence of the knee jerk a result of functional disease is its inconstancy, the knee jerk often returning as the other symptoms disappear.

EDWIN BRAMWELL.

AMNESIA FROM A MEDICO-LEGAL STANDPOINT. ALFRED (495) GORDON, *N.Y. Med. Journ.*, Feb. 6, 1909.

THE writer reports the case of a man who murdered a girl with whom he had relations. After killing the girl he turned the revolver to his right temple and shot himself. An X-ray photograph was taken and showed the bullet to be in the left temporal region. When the patient regained consciousness he would not believe that there was a bullet in his brain, even after the photograph had been shown to him; he refused an operation. He had no recollection of having killed the woman or of having shot himself. A physical and mental examination revealed nothing abnormal; he gave a clear, coherent, and consistent account of his life up to the commitment of the crime.

When the man came up for trial the question came to be whether the amnesia was genuine or simulated; it was thought that the man was constitutionally inferior, but he exhibited no stigmata. After thorough and close questioning it could not be proved that he was simulating. At the time of the crime there was apparently no indication of mental derangement caused either by alcohol or other intoxication, so the next question came to be: "Does or does not the loss of memory for a former criminal act, for which the author was then responsible, destroy his responsibility?" The writer argued that as the legal definition of insanity covers practically all forms of mental deficiency, an amnesic individual must necessarily be placed in the category of lunatics. The verdict was as follows: "We find the defendant guilty of murder in the first degree, also that he is now a lunatic and unable to confer with Counsel in regard to the tragedy." D. K. HENDERSON.

PSYCHIATRY.

ON ALIMENTARY GLYCOSURIA IN PSYCHOSES. (Ueber (496) alimentäre Glykosurie bei Psychosen.) R. EHRENBERG (of Göttingen), *Monatsschr. f. Psychiat. u. Neurol.*, Jan. 1909.

THE occurrence of spontaneous glycosuria in many nervous diseases has been noticed, and has led to numerous investigations into the limit of assimilation of the sugars in these diseases. Similar investigations have been made into alimentary glycosuria in mental diseases (Arndt, Raimann, etc.); the results of the various authors have not always been the same. Ehrenberg used the following method:—150 grammes of grape sugar in solution were given to the fasting patient at 8 a.m., the patient was kept in bed, and the urine of the next three to four hours collected, and examined for reducing substances by Fehling's method. The following cases were examined:—general paralysis, 4; senile psychosis, 6; paranoia, 1; periodic or senile melancholia, 1; circular psychosis (depressed phase), 2; adolescent insanity, 9 (2 in a catatonic condition); constitutional inferiority, 8; chronic alcoholism, 1; alcoholic delirium, 1.

A positive reaction was found in the following cases:—melancholia, 2; arteriosclerotic brain disorder, 1; senile psychosis, 2; idiocy, 1; chronic alcoholism, 1; acute delirium, 1. The case of idiocy was complicated by the fact that the patient was under thyroid treatment; the two alcoholics had frequently shown spontaneous glycosuria.

All the positive cases, apart from those mentioned, were patients in advanced life, between fifty-nine and eighty; the depressed cases showed no special tendency towards a lowering of the assimilative capacity for sugar. The author's conclusions are:

1. Age has a distinct influence on the capacity for assimilating carbohydrates.
2. Apart from the influence of age, there does not appear to be either in the author's material nor in that of others any evidence of the influence of the psychosis on the capacity for assimilation, with the exception of the alcoholic psychoses.
3. If certain psychoses do have an influence on the capacity for assimilating grape-sugar, this influence must be insignificant.

C. Macfie Campbell.

SOME SOMATIC CONCOMITANTS OF DEMENTIA. (Ueber einge (497) körperliche Begleiterscheinungen der Verblödung.) Lomer (of Blankenhain), *Psych.-Neur. Wchnschr.*, July 18, 1908.

Various bodily symptoms frequently go hand in hand with the process of mental deterioration. Vasomotor symptoms may be prominent, the patient may present an unhealthy pallor due not to anæmia but to contraction of the vessels. The opposite is more frequent, viz., chronic dilatation of the vessels; the hands and feet are cyanotic, feel cold, appear swollen. Excessive salivation, seborrhœa, sweaty feet, and the marked increase of adipose tissue are other symptoms referred to. C. Macfie Campbell.

ON DEMENTIA PRÆCOX, ESPECIALLY THE PARANOID FORM. (498) (Ueber Dementia praecox, insbesondere die paranoide Form derselben.) O. Kölpin, *Allg. Ztschr. f. Psych.*, Bd. 65, Ht. 1.

The author gives a statistical analysis of one hundred cases of dementia præcox, and discusses in some detail the classification of cases of the paranoid form. C. Macfie Campbell.

A BACTERIOLOGICAL EXAMINATION OF THE CEREBRO-(499) SPINAL FLUID IN DEMENTIA PRÆCOX. G. H. Harper Smith and Rae Gibson, *Arch. of Neurol. and Psychiat.*, Vol. iv., 1909.

The authors confined their attention to the examination of the cerebro-spinal fluid for the presence of micro-organisms and of protein in thirty cases which had previously been diagnosed as suffering from dementia præcox. The methods adopted for the cleansing of the operator's hands and the patient's back are explained at length, and from the fact that their results were at first spoilt by what was evidently air and skin contamination, they lay great weight upon the necessity of absolute cleanliness in the procedure adopted. They also hint that the results may be further rendered unreliable by the introduction of antiseptics into the canal on the point of the lumbar puncture needle.

Twenty-three cases were examined after the operators were satisfied that their technique was correct, and these proved negative in every case. All the cerebro-spinal fluids which escaped blood contamination were further examined for the presence of protein by Noguchi's method, and again the results were negative. The conclusions arrived at are, that any organism discovered in the cerebro-spinal fluid of dementia præcox is probably due to external contamination from the air or skin, and the negative results obtained by the Noguchi test render it improbable that dementia præcox is a parasyphilitic affection. R. DODS BROWN.

AMAUROTIC FAMILY IDIOCY. H. W. WANDLESS, *N.Y. Med.* (500) *Journ.*, May 8, 1909.

THE three cases reported are unusual in that they have occurred in a family five-sixths Irish, and have developed after the third year of life. The family history is negative ; the mother has given birth to seven children. One child died from convulsions at the thirteenth month, three are strong and healthy, and three have been affected. In two of the children the condition developed when they were eight years old, and in the other when seven years old.

D. K. HENDERSON.

GENERAL PARALYSIS OF UNUSUALLY LONG DURATION. (501) M. J. KARPAS, *N.Y. Med. Journ.*, March 6, 1909.

THE writer makes a brief statement in regard to the literature of the subject, and reports two cases, one with autopsy. One case has already been of twelve years' duration, and the patient is still in fairly good physical health. The one with autopsy was of eighteen years' duration. D. K. HENDERSON.

TREATMENT.

SOME ASPECTS OF PSYCHOTHERAPY. J. J. THOMAS, *Boston* (502) *Med. and Surg. Journ.*, Vol. clx., No. 1.

VARIOUS methods are described and several illustrative cases are reported. Psychotherapeutic methods should only be used in those cases where there is a purely functional disturbance of the processes of the mind. One should analyse each case very thoroughly, as it is only by careful analysis that one can form a sound basis for any psychotherapeutic treatment. D. K. HENDERSON.

THE PRESENT RELATIONS OF PSYCHOTHERAPY. R. T. (503) EDES, *Journ. Amer. Med. Assoc.*, Vol. lii., No. 2.

AFTER some general remarks on psychotherapy, the use of hypnotism and Freud's analytic methods are especially criticised. The power of hypnotism for evil and the range of its applicability for therapeutic purposes have both been exaggerated; persuasion, instruction, re-education and suitable employment are quite as good, if not better, methods of treatment. Freud's method does not involve the induction of hypnosis but an attitude of confidential trust, evoked by the long-continued and careful questioning as to the earliest recollections which have given rise, through long trains of association, to morbid psychic conditions largely of fear and depression. This method has probabilities in its favour, but demands a vast amount of time and patience, and is apt to vivify ideas of the very kind it is desirable to get rid of.

The writer thinks that the view held by Freud, that every phobia has a sexual foundation, is an important though rather extreme one. D. K. HENDERSON.

PSYCHOTHERAPY AS APPLIED TO CHILDREN. A. C. EAST- (504) MAN, *Boston Med. and Surg. Journ.*, Vol. clx., No. 6.

CHILDHOOD is divided into three periods, viz.: infancy and early childhood, from birth until five years of age; early school life, from five until ten years; early adolescent life, from ten until fifteen years of age.

In the first period the best time to use suggestion is just after the child has gone to sleep, or, if this is impossible, it can be used during sound sleep. Two cases are reported to illustrate the use of suggestion during these early years.

During the second period suggestion is mostly adapted to nervous conditions, spasms, habits, and mild forms of hysteria. To ignore a symptom is, however, often the quickest method of cure in both these first periods.

During the third period neurasthenia, severe cases of hysteria, religious states and emotions have to be dealt with. Direct or "rational" suggestion is the most valuable in these cases. "It is a valuable means of assistance in training and educating a child's mind, so that more and more will the adult of the future be able to grasp and manage the problems which are constantly growing more complex." D. K. HENDERSON.

THE GENERAL PRACTITIONER AND THE FUNCTIONAL NERVOUS DISEASES.

(505) J. Collins, *Journ. Amer. Med. Assoc.*, Vol. lii., No. 2.

In this paper the writer points out how the study of the functional nervous diseases has been neglected by general practitioners, and inveighs against the so-called Emmanuel movement promulgated by the Rev. Dr Worcester of Boston. D. K. Henderson.

NERVE STRAIN OF SCHOOL CHILDREN.

(506) Louis W. Flanders, *Boston Med. and Surg. Journ.*, Vol. clx., No. 8.

The writer suggests various measures for the prevention of nerve strain, a few of which are as follows :—

1. A child should not be sent to the public school until he is seven years old.
2. Compulsory examination of the eyes at least once a year.
3. A most careful study of the child by both teacher and parents to see that no more mental work is required of him than he can endure without detriment to his health. " Better a generation of healthy fools than a race of wise invalids."

D. K. Henderson.

ALCOHOLIC INJECTIONS IN NEURALGIAS, ESPECIALLY IN TIC DOULOUREUX.

(507) O. Kiliani, *Med. Rec.*, June 5, 1909.

The report is based upon 190 cases of facial neuralgia. The author claims that he has only had five failures. The other 185 cases were all freed from pain for a certain stated time. From 1 to 4 c.c. of 80 per cent. alcohol are injected, and on an average three injections have to be made, although, of course, the number depends on the number of branches affected and the severity of the case. In the treatment of mixed nerves 60-70 per cent. solution of alcohol has to be employed, and the dosage has to be carefully regulated, so as only to produce paresis and not paralysis. Of the 190 cases treated since September 1906, 42 per cent. have had no recurrence up to date. In the other cases the time when the recurrence appeared varied from three months to two years.

The author claims that there is no safer and more reliable method of treating this affection. D. K. Henderson.

Reviews

LEHRBUCH DER NERVENKRANKHEITEN. Herausgegeben von CURSCHMANN. Berlin: Julius Springer, 1909. M. 24.

THIS is a work of 907 pages and 289 illustrations. It is clearly and concisely written, and the illustrations, which are beautifully reproduced, are chosen and placed with great judgment. The volume is intended as a text-book for students and practitioners, and not merely for specialists. The various sections have been written by authors who have devoted special attention to the subjects with which they deal. The general diagnosis of nervous diseases has been treated by Schoenborn of Heidelberg, diseases of the peripheral nerves by Steinert of Leipzig, diseases of the spinal cord by Rothmann of Berlin, Schoenborn of Heidelberg, Jamin of Erlangen, Schlesinger of Vienna and Finkelnburg of Bonn, the myopathies by Curschmann of Maintz, diseases of the brain by Liepmann of Berlin, organic nervous diseases of childhood by Ibrahim of Munich, hyperkinetic diseases by Pineles of Vienna, psychasthenic conditions by Aschaffenburg of Cologne, diseases of the sympathetic system by Müller of Augsburg, vasomotor and trophic diseases by Curschmann, intoxications of the nervous system by Quensel of Leipzig, and the surgery of the nervous system by Krause of Berlin. These names afford a sufficient guarantee that their contributions are thoroughly abreast of the recent advances in our knowledge of nervous disease.

ALEXANDER BRUCE.

DIE SINNESTÄUSCHUNGEN. Bearbeitet von H. OBERSTEINER. Sonder-Abdruck aus dem Handbuch der ärztlichen Sachverständigen-Tätigkeit. Vienna and Leipzig: Wilhelm Braumüller, 1909.

IN this monograph, which is a reprint from a large and encyclopædic work dealing with medico-legal subjects, Obersteiner discusses the subject of hallucinations and allied phenomena in a systematic and comprehensive manner. The special demands made by the general plan of the complete work are, of course, reflected in the treatment of the topic. Those hallucinatory conditions which are apt to give rise to medico-legal complications receive special attention, while questions of more purely psychological and pyschiatric interest are treated rather summarily or even omitted. Thus there is no special study of the actual form in which patients refer to their hallucinations, nor of the manner in which many patients differentiate these morbid experiences from actual sense perceptions. The author considers that hallucinations with the character of objective sense perceptions can only arise through the stimulation of cortical sensory centres, but that the exact nature of the process is far from clear.

After the systematic exposition of the nature of hallucinations and illusions, and of their occurrence in relation to the various senses, the author discusses the various conditions in which they arise. He calls attention to the fact that hallucinations form a part of the mental experience of sane people, and that in dreams hallucinatory elements are present; special reference is made to the presence of hallucinations in degenerates, in the course of bodily diseases, in epileptics, in the hysterical, and in certain toxic conditions. Their rôle in general mental diseases is referred to very briefly.

The second part of the monograph is devoted to the medicolegal importance of hallucinations, both with regard to civil and to criminal law. The existence of hallucinations does not necessarily disqualify the individual from attending to his business, nor invalidate a will. With regard to criminal suits it is important to note that the existence of hallucinations does not necessarily exclude responsibility. The various conditions, in which hallucinations form one of the important features to be used in arriving at a decision, are gone into in some detail.

The monograph gives in a very concise manner an excellent discussion of the subject from the special point of view, and will be equally useful to alienists and jurists.

C. MACFIE CAMPBELL.

WHAT IS HYSTERIA? A NOSOLOGICAL DISCUSSION. (Was ist Hysterie? Eine nosologische Betrachtung.) A. STEYERTHAL. Halle: C. Marhold, 1908. Pp. 79. M. 1.80.

THIS book is a somewhat general and abstract discussion of the subject of hysteria, with so few references to concrete clinical facts that its value is very limited. The first chapter is devoted to a review of the history of the subject beginning with the Hippocratic writings, and the author, out of consideration for more ignorant colleagues, but obviously with reluctance, relegates the original Greek to the appendix. In the following two chapters the teaching of the Salpêtrière and the more modern German views are discussed, and thus the way is cleared for the author's presentation of his own views. This presentation is dogmatic in form and extremely schematic. There is no disease hysteria; hysteria is a mere group of symptoms, and consists in nothing more than the hysterical stigmata. These latter are symptoms of fatigue and exhaustion; their occurrence in the most diverse somatic and mental disorders can easily be understood. What is called hysteria is a purely artificial group of types of disorder which have nothing in common except the stigmata. The author bases his views on cases observed by him in a hydrotherapeutic institute from 1895 to 1907. He endeavoured first of all to separate the neurasthenic from the hysteric, but the presence of hysterical stigmata in half of the neurasthenics made the task difficult. A formal division was made, however, into hysteria, neurasthenia and hystero-neurasthenia, and each group was subdivided into the constitutionally inferior and those with acquired nervous weakness.

Hysteria is merely the higher grade of neurasthenia ; it includes two sub-groups, one of which contains the degenerates, while the other has cases of acquired exhaustion. Hysteria can be acquired. Heredity is not the cause of hysteria ; it may explain the constitutional inferiority, but the latter is merely the basis upon which the hysteria develops.

In order to show that the stigmata are merely symptoms o fatigue the author refers to Janet's analysis of these stigmata ; in fatigue one finds a mental state similar to the one on the basis of which the stigmata arise ; hence the conclusion of the author.

Such considerations throw little light on the important topic which the author has chosen ; the subject requires to be treated in a much more concrete and less formal manner.

C. MACFIE CAMPBELL.

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Review
of
Neurology and Psychiatry

Original Articles

A MODERN CONCEPTION OF DEMENTIA PRÆCOX, WITH FIVE ILLUSTRATIVE CASES.[1]

By C. MACFIE CAMPBELL, M.B., B.Sc., M.R.C.P. Ed.,
Associate in Clinical Psychiatry, Psychiatric Institute of the New York State Hospitals, Ward's Island, N.Y.

THE student of mental disorders is no longer satisfied with a crude classification into mania, melancholia, and dementia, nor with more elaborate but purely symptomatological classifications. To Kraepelin is due in large measure the credit for grouping mental disorders according to the laws of their final evolution. His name is especially associated with the creation of two large groups belonging to the functional psychoses—the one group with a favourable prognosis, manic-depressive insanity, the other with an unfavourable prognosis, dementia præcox. Through the analysis of those symptoms which are especially important as prognostic aids these groups have attained a certain symptomatic prognostic importance.

The symptomatology of the large provisional group of dementia præcox is now sufficiently familiar. Much work has been done in differentiating this group from other groups and in dividing it into sub-groups, and also in giving further definition to the individual symptoms. The psychology of the disorder has received much study, and attention has been drawn to the two main factors, the disorders of volition and the dissociation of the emotional from the intellectual life. On the other hand the physical symptoms have been emphasized, and histopathology has contributed some facts with regard to cortical changes.

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[1] Read in abstract before the American Medico-Psychological Association at Atlantic City, N.J., on June 3, 1909.

In endeavouring to find out the nature of any disorder the line of investigation is often already determined by the nature of the clinical data. Thus in the presence of a fever one thinks of working along the lines of ordinary bacteriological technique. When one endeavours to find out the essence of a complex disorder of the biological economy like dementia præcox the line of investigation is not so clear; the few facts available are often interpreted not so much in the light of clinical experience as in the light of *a priori* theories.

When it is a question of formulating a conception of dementia præcox two widely divergent attitudes are encountered. One set of investigators consider that the most hopeful line of investigation is to be found when we regard dementia præcox as essentially similar to general paralysis, where nerve tissue is destroyed by the presence of undetermined poisons, and where in the slow deterioration of the nervous system many mental pictures may crop up (Kraepelin). These mental pictures may be of diagnostic help, but are considered as irrelevant features from the dynamic standpoint, and not as important guides to the pathogenesis of the disease. A very different point of view is that of those who do not *a priori* rule out the dynamic importance of psychological factors, nor believe that it is only in hysteria that this principle is available (Meyer). They do not divorce psychological reactions from the other reactions of the individual, but consider them merely as the most complex of human biological reactions. The tendency of those who adopt the former point of view, *i.e.* the view that general paralysis is the paradigma of dementia præcox, is to remain content with rather formal clinical differentiations, to refer to the presence of mannerisms, stereotypies, odd reactions, hallucinations, delusions, etc., without paying much attention to their content, and without endeavouring to ascertain what relation such content bears to the life-history of the individual. It is assumed that such reactions are more or less meaningless, not to be psychologically analysed, and that one must look away from them to the various pathological laboratories for further light on the pathogenesis of the disorder. It is important to note that this assumption depends upon a general philosophical attitude rather than upon any established body of observations. Studies on metabolism in mental disorders have been numerous; the blood has received attention; every constituent of the urine has been estimated, and wide-reaching conclusions drawn; the various glands with internal secretions have furnished ready material for hypotheses. Methods have often been crude, and with regard to the examination of the urine it is interesting to note what Folin, at the end of his report of a very conscientious series of investigations, says: "From a destructive, negative, or critical point of view it is believed that the data given prove the untrustworthiness of all the metabolism experiments, old and new, which report a 'characteristic' 'increase' or 'diminution' of any of the urinary constituents included in the research as associated with any particular one of the ordinary mental disorders. It is not claimed that such characteristic abnormal metabolism may not exist, but simply that the experiments recorded in the literature are insufficient to demonstrate the fact."

Perhaps the most conclusive evidence of the want of any reliable series of observations to warrant the formation along these lines of any hypothesis as to the pathogenesis of dementia præcox is the statement by Kraepelin himself: "The most probable hypothesis in view of the relations of the disease to the developmental period, to menstrual disorders, to the function of reproduction, to the climacteric, is, in the absence of any recognized external cause, to think of an auto-intoxication which possibly might stand in some more or less distant connection with processes in the sexual glands." That this hypothesis, so vague as to be worthless, should be formulated at all in the present state of our knowledge shows that the attitude of the individual is apt to be determined by general principles rather than by any adequate body of observations. In the absence of the latter, surely it would be better to forego any hypothesis rather than to adopt one which is apt to give an undue bias to clinical investigation.

An entirely different conception of the disorder from that presented by the advocates of theories of auto-intoxication was the one submitted by Adolf Meyer before the British Medical

Association at Toronto in August 1906.[1] This conception was based not merely on a study of the symptoms of the disorder, but also on a careful analysis of the whole life-history of the patient. The disorder may seem to come out of a blue sky, but careful investigation enables one to see in it the culmination of a long period of bad mental hygiene. On the surface the individual may have met the demands of daily life sufficiently well to avoid the special notice of his friends and relatives, but beneath the surface mental life is found to have been far from smooth. Instead of facing squarely the difficulties of life and of their own constitution, these individuals have been prone to indulge in unhealthy substitutes for normal reactions. They are apt to meet sexual difficulties by taking refuge in masturbation, sexual ruminations, and a generally unhealthy mode of handling the topic; similarly, instead of being frank in other directions, they are apt to brood over their troubles, to see meanings that are not intended, to neglect the ordinary balancing factors of a healthy life; beneath their ordinary daily activity there is usually a variety of internal discrepancies quite incompatible with that feeling of satisfaction which goes with good bodily and mental health.

Meyer frequently found that the patient was "habitually dreamy, dependent in his adjustment to the situation of the world rather on shirking than on active, aggressive management, scattered and distracted either in all the spheres of habits, or at least in some of the essential domains of adjustment which must depend more or less on instinct or habit."

August Hoch, of Bloomingdale Hospital, has made a careful analysis of the personality of those individuals who had later developed dementia præcox; he found that the majority of cases deviated markedly from a frank, open personality.

Jung, of Zürich, has shown that in many cases one may penetrate the trivial and fantastic form of hallucinations and delusions and trace in them the expression of a serious and important content; the distorted behaviour and trends of thought of the patient may often be shown to bear a vital relation to the previous life of the individual. Owing to this analysis Jung has given a psychological meaning to many symptoms which previously were, and by many still are, considered to be the meaningless expression of the activity of disordered nerve tissue, incapable of any analysis along the lines of normal psychology.

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[1] *vid.* "Fundamental Conceptions of Dementia Præcox." Adolf Meyer, *Brit. Med. Journ.*, Sept. 29, 1906.

When, therefore, we see that the symptoms of this mental disorder consist in the outcropping, in a peculiar, distorted and frequently symbolic form, of the thoughts and ruminations and longings of the individual, and when on the analysis of that individual's inner life we find that these elements have been a disturbing factor throughout, and when we find that this disorder appears to arise in individuals of certain temperamental peculiarities, our conception of the disorder tends to be largely of a psychological nature. At any rate, if we are to keep close to the facts of observation and not to be led away by vague hypotheses, we shall express what we know about the disorder largely in psychological terms. In doing this we in no way neglect the importance of the physical symptoms incident to the disorder. The fact that one attributes importance to psychological factors does not mean that one neglects observations on metabolism or other bodily functions. Psychological reactions must be looked upon as merely the most complicated biological reactions; in such reactions there is always a somatic component of more or less relative importance. The disorder of the biological economy in dementia præcox appears to be closely related to disorders of these most complex human reactions; to try to express the disorder of the biological economy in dementia præcox in terms of a lower denominator than one which includes psychological reactions would be to fail to do justice to the facts of observation.

If we adopt this conception our attitude towards this disorder and allied conditions becomes much more practical. Unhampered by empty hypotheses as to the mutual relationship of mind and body, and refusing to express the facts of observation by an inadequate denominator, we are able to direct our activities wherever facts can be modified. When we understand better the development of cases of dementia præcox, the soil upon which it is most likely to arise, the educational and social factors which appear to influence it, the nature of the troubles which seem to precipitate it, the physical disorders which accompany it, we shall perhaps be able to aid more effectively in the development of those individuals who give evidence of ominous constitutional traits, and be able to contribute more guidance towards the mental health of the community. Even where the disorder has been established we shall not in a routine way give a bad prognosis on account of certain ominous features; we shall rather weigh all the facts in the development, consider how far the circumstances are modifiable, work upon what is still available, and be guided in our prognosis by the result of these efforts.

It is frequently difficult to trace the development of a case of dementia præcox. The patient has not as a rule talked frankly over those very difficulties which are most important; the symptoms of the disorder itself frequently exclude any satisfactory co-operation on the part of the patient; it may no longer be possible from the material obtained to reconstruct the situation out of which the psychosis developed.

In the following cases, although many details may be lacking, the main outlines of the development are sufficiently clear to exemplify the conception of dementia præcox outlined above.[1]

CASE 1.—In the following case we can trace in outline, if not in detail, the general development of the mental disorder in a person with certain defects in her constitution and whose life had been poorly regulated, especially in view of the dangers to which her constitution predisposed her.

The patient is a woman of thirty-five, who at present shows defective judgment, affected behaviour, a mood which varies between a certain coquettishness and marked irritability; she talks in a facile way of rather foolish plans for the future, and maintains the reality of some of her previous hallucinatory experiences. As a child she was intellectually of average endowment; she was rather quiet and obstinate, sensitive and easily annoyed, rather selfish and apt to think herself better than her neighbours. She would be much more pleasant to outsiders than to members of her own family. She tended to shirk work and often appeared to be day-dreaming; she took no interest in religious matters. No definite information was available with regard to her early sexual development, but apparently she had no feeling for the ordinary sanctions of sexual morality. About the age of twenty she was seduced, and lived with her seducer for two and a half years. A few years later she became the common-law wife of the man whose name she now bears. The patient was a Roman Catholic, the husband a Jew. A child was born, and there was considerable discussion as to whether he should be baptized or circumcised. After the birth of the child the question of her irregular relations occupied her mind considerably; there was much friction between her and her husband, and for several months, owing to their strained relations, her sexual instinct was not satisfied. In November 1906, after somewhat odd behaviour, she began to hear voices accusing her of improper intimacy with the rent collector, an attractive man. The voices said that he was in a certain barn and she tried to enter it in order to defend her honour. She felt that the rent collector was attracted to her and wanted to make love to her. She was taken to a hospital for the insane, and during the next six months she had auditory hallucinations of sexual content. She frequently heard the voice of the rent collector making love to her in a very boisterous manner; other voices accused her of horrible things, *e.g.* said she would give birth to a dog-faced baby. At times the hallucinatory condition became much less marked, and she would even admit that she had been insane. She had once stuck a pin in the child's penis when he was an infant; in the hospital she spoke of having an operation on the child; she seemed to have the idea that if the operation were done the child would be a Jew child. She was discharged eleven months after admission, as her husband was willing to take her home. She still maintained the reality of some of her hallucinatory ideas. After leaving the hospital she again began to talk of the rent collector, and could not stand her husband. She began to think that her boy was not sexually normal, threatened to circumcise the child if no one else would do it. About two months later she was again committed to the hospital. She complained that she still heard voices talking about the same sexual topics. The patient took her detention calmly, was rather affected in behaviour, smiled rather easily. She talked freely but rather diffusely about her experiences and beliefs, and it was somewhat difficult to follow many peculiar remarks of religious and sexual nature. The two main trends in her mind concerned her longings for the rent collector and her worry with regard to her boy. Her actual worries over the boy had become transformed into a somewhat complicated series of delusions. The difficulty raised by the child being born of a Roman Catholic mother and a Jew father was resolved by the comforting belief that the child was meant for God; it represented the union of two religions. The little injury which she had caused the child was in some way a fore-ordained occurrence in order to bring about circumcision. On the other hand she felt that the child might grow in a mysterious way, he might become a criminal, might stick pins in other children, seeing that he knew the difference between Hebrew and Christian children. The patient talked with no reticence of her past life; she did not appear in any way to regret the irregularity of her sexual habits; she attributed no blame to herself. After seven months in the hospital the patient had made considerable improvement so that her husband took her out on parole, but owing to her peculiar behaviour she returned after nine days. It is now almost one year since the patient has returned from parole.

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[1] For permission to publish these cases I am indebted to Professor Adolf Meyer, Director of the Psychiatric Institute of the N.Y. State Hospitals, and to Dr William Mabon Superintendent and Medical Director of Manhattan State Hospital, Ward's , N.Y.

Physically, the patient has always shown satisfactory nutrition; she has complained only of a slight feeling of nervousness. There has been nothing to note in the condition of the internal organs except the presence of a mitral systolic murmur. There have been no neurological symptoms.

In this case we have to deal with a woman of average intellectual ability, but showing a want of certain of the balancing factors which are of importance in the regulation of life. At a period when her relations with her common-law husband were very much strained, when her difficulties of adjustment with regard to her sexual life and the position of her boy were at a maximum, and when her sexual instinct was unsatisfied, she passed into a psychosis in which the main hallucinatory and delusional elements bore a very direct relation to the actual difficulties of her life. The psychosis could obviously not be adequately understood except in the light of the patient's constitutional traits and the actual experiences and difficulties of her life. To a certain extent the psychosis represented a method of escape from the actual tangle of her life and fulfilled for her certain wishes not realized in her actual life.

CASE 2.—The second case is that of a young woman of thirty-four, who at the present time shows a certain degree of deterioration in her general interests and standards of conduct, and who has many poorly elaborated delusions of a religious nature. As a girl she was bright at school and interested in her lessons. On leaving school she was able to earn her own living as an efficient machine operator, notwithstanding the residuals of a hemiplegia, probably of embolic origin. In her social life she was not known to have shown any marked peculiarities; she was not, however, considered quite as bright as her sisters. Although a Protestant, at the age of twenty she took a great deal of interest in the Roman Catholic Church. From a very early age she was addicted to the habit of masturbation, and, as a girl, was checked by her mother for this: her mother did not at the time see any indication that the girl worried over the habit. No definite precipitating cause for the onset of her psychosis could be ascertained; her sister thought she was disappointed over the marriage of a friend whom she had expected to marry. Towards the end of 1907 she gave up her position, was quiet and despondent, complained of weakness. She said that there was something on her mind, and then told her mother that she had carried on the habit of masturbation since childhood. Owing to her depression she was committed to Manhattan State Hospital, and admitted to the clinical service of the Psychiatric Institute. The patient has been more than a year in the hospital; for the first month she talked in a somewhat despondent strain of her bad sexual habits, and told how her mind had always been occupied with ruminations on sexual topics, with longings for marriage which she satisfied by masturbation. She said that previous to admission she had felt that people would turn and look at her, and that her people noticed that she was getting crazy. When the woman physician examined her she thought that it was to draw the blood from her head and make her brain stupid. After a few weeks in the hospital the patient, who had gone very little to church, began to express rather exalted religious ideas; she felt that she was in the hospital in order to take away the suffering of every person; now she belonged to no church; she must rely upon God. She uttered many empty religious statements, said that her mind ran on "the truth," that she depended on God, that she wished to go out in the world and heal the sick, but especially the sinful. Her mood was extremely superficial and variable; at times she talked in a tone of despondent humility, at other times with an air of satisfied religious pride. She made such empty religious statements as the following: "I refused good from you yesterday and kept out your good influence, I won't let God come to me, I have the secret of life, I have the Holy Grail." She said that she saw the law of gravitation here; when people passed her they lifted their nostrils and saw that she was not a good person; she was governed by every mind in the place. Her mind ran to a large extent on sexual topics; she talked of having had beautiful dreams, some of a religious, others of a sexual nature. She was still addicted to bad sexual habits. No good analysis could be got from the patient as to the exact steps through which she had passed from her condition of depressed self-reproach into one of religious exaltation.

Physically the patient presents the residuals of a right-sided hemiplegia; apart from occasional palpitation due to a valvular cardiac lesion, the patient has been in excellent physical condition during her residence in hospital.

In this case we have a woman in whom the sexual instinct has been a disturbing factor from a very early age. In the psychosis there were side by side despondent references to her bad sexual habits and to the consequent feelings of shame, and an attempt to compensate for this want of inner harmony by empty religious ideas for which the life-history of the patient had furnished no sufficient material. The nature of the psychosis could not be considered as irrelevant to the constitution and the whole life-history of the patient, characterized as it was by bad mental hygiene. In this case the development could only be followed in broad outlines, as the data with regard to the patient's life were meagre.

Case 3.—In the third case the inner development of the disorder can be traced in the same broad outlines, but the patient is not willing to co-operate in a psychological analysis of the development. At present, although she does some work efficiently in the hospital, her whole interest is in religious topics. She reads nothing but religious books; she refuses to go to entertainments; her chief desire is to enter a convent. She only occasionally is in a mood which permits some discussion of her earlier longings and ambitions. Six years before her first admission she had broken an engagement with a young man. Of late she has written to him as her spiritual husband, and she has usually referred to his wife by her maiden name. She will not discuss this topic at all, so that one does not know the exact steps through which she has passed to finally take refuge in a somewhat empty religious life, where the actual disappointments of her life are ignored and replaced by slightly mystical ideas which serve to fulfil her wishes. The main facts in the history of this patient are as follows:—

The patient as a child was healthy and was considered bright; she received a somewhat limited convent education; no details as to her early reactions are available, but apparently she was always of a quiet disposition and very scrupulous. For many years she earned her living by needlework; she has always led a rather narrow life and been more or less taken up with religious matters. If she went to any place of amusement she would say that she had been frivolous, and would make atonement by prayer. She has always been rather dignified, secretive, and a little prudish. She would be extremely disgusted and shocked by things that as a general rule did not shock other people. She always resented everything that was in the slightest way improper. When her home was broken up she boarded not in regular boarding houses, but in deaconesses' homes with religious routine, where she was probably underfed.

About the age of twenty-six she became practically engaged to a young man who appears to have been a very satisfactory individual. For some reason she left the town where he lived, and later broke off the match and entered a convent; she was advised to leave after a month on account of her nervous condition. Both before and after entering the convent she worried over her sister having an illegitimate child. She was able to earn her living during the next four years, chiefly by needlework. In 1905 she became nervous, and at night had peculiar feelings as of animals running over her; she also suffered from headaches. She improved after three months' treatment in a hospital; she then took up gymnastics, but in 1906 she felt as if she had strained her side. She slept poorly at this period. In April 1906 she was operated on for floating kidney; she became sleepless, saw visions at night, became depressed over past behaviour, was despondent as to recovery. She went to the country to recuperate; her depression continued; she occasionally thought she heard her name called. In September she was in a sanatorium ; there she fretted and picked her skin She was committed to Manhattan State Hospital in January 1907, and admitted to the clinical service of the Psychiatric Institute. She showed pronounced depression, moaned in great distress. She felt that she was lost; she talked of some vague fear, said that her mind had been in an imaginative way. She showed some confusion as to the date, was rather hazy in the time relations of remote events in her life. Her mind was completely dominated by depressing ideas, and she made many hypochondriacal statements ; she thought there was something inside her, that she had a tapeworm, perhaps cats or mice or snakes; something seemed to jump in her abdomen and crawl up her throat; she continually picked her face; she despaired of God's mercy, said that a nurse in the previous sanatorium had called her "You old Antichrist." After four months the patient began to show some improvement, became more cheerful and industrious. She still was sensitive to any remarks made, thought they referred to her. As she improved she was able to give an account of her early development, and told how much she had been dominated by religious preoccupations. In the convent school she felt more stupid than the other girls; the religious instruction gave her a feeling of fear; she was always of a scrupulous nature, and after leaving school worried about the alcoholism of her brother, the illegitimate child of her sister. Intellectually she was not bright. When she began to read the Bible for herself her mind dwelt on the more forbidding aspect of the doctrine in it. People used to tell her she was dreamy-looking, that was because she was brooding on these religious matters ; she had never been quite free from religious worries. She denied that she had ever been addicted to self-abuse. The reason why she had given up her engagement was because of a certain feeling of unworthiness. When she first fell sick she used to think of God all the time as she lay awake at night; she would try to make a picture of what she had seen in Church, of Christ the consoler. She fell into doubt about the salvation of her soul, and began to reproach herself for the way in which she had treated her fiancé and her sister.

The patient made such marked improvement that she left on parole early in 1908. She did not, however, adjust herself well to the ordinary routine of life in her friend's house, did not wish to dress or to eat, stood about as if in thought, was very stubborn. She wrote a letter to her previous fiancé, about whom, as a matter of fact, she had been worrying before leaving the hospital; her sister had told her that he was married and happy. During 1908 the patient was not able to get on well; her thoughts appear to have been dominated by the one topic of this young man. She talked about him freely, and while doing house-work in a seminary for priests, in every one of the priests she seemed to see this gentleman. Her religious trend was also very marked; everything that she did was by God's will. She went to the town where her former fiancé lived, and asked for his wife by her maiden name. She started to work there; she began to talk of this man as her spiritual husband. Owing to this conduct, and to exaggerated religious observances, she was again brought to the hospital. Since re-admission she has shown a rather uncompromising attitude, refusing to face the actual facts of her experience, living in a rather mystic world, in which her old fiancé is her spiritual husband and in which her one duty is to be true to religious observances.

CASE 4. — The fourth case is that of a seamstress, 28 years of age, whose psychosis is now of two years' duration. Her constitutional traits are of importance. In the intellectual sphere she was sufficiently well endowed; her vulnerable points lay in other directions. She was rather conceited, prided herself on her general appearance and on her reputation among her associates; she was sensitive to slights, scrupulous about the feelings of others. She disliked any indelicate reference to sexual matters; she was too modest to undress before her sister; she was scrupulous about her associates. She lived a rather narrow, uneventful life. In 1905, when she was twenty-four, the first important upsetting factor entered her life. There was at that time forced on her the acquaintanceship of a man, who at the same time repelled and attracted her; he attracted her through his intellectual gifts, he repelled her through his familiarity and his unchivalrous way of referring to women. The attraction gained the upper hand, and for some months he was much in her society, and even borrowed money of her. One day in raising her playfully up by the shoulders, he caused a somewhat severe injury to one shoulder. In receiving treatment for this injury she had to spend money which she could ill afford; to her great chagrin she found that her friend was a divorced man, she was much humiliated by the fact, did not mention it to her sister. A few months after the accident to her shoulder, her friend left her without saying good-bye, and owing her about twelve dollars; the patient's attitude towards him now distinctly changed, and she had no more correspondence with him. Later in the same year she became very friendly with a young woman, who appeared to have a good deal of trouble in her married life, and was preparing a case against her so-called husband. The patient espoused her friend's cause, lost sleep and food in helping her friend, and became much fatigued. Some time later she found that her friend had never really been married. The patient took this very much to heart, and soon afterwards she began to worry over her previous friendship and the accident to her shoulder; she became so nervous that she was sent to her brother for a vacation. She felt that she was unworthy to go to church, that God was cross with her; she tried very hard, but unsuccessfully, to shake off the memory of her association with her two previous friends. She began to feel responsible for the calamities which she read of in the papers, such as a terrible fire, the death of a bishop, etc.; one morning when the sun streamed in at the windows she thought the whole world was on fire. She was taken to a hospital for the insane; there she was very much excited, talked in a disconnected, irrelevant manner, refused food, and was tube-fed with great difficulty. The only two samples of her utterances during this period, which we have, are: "It is funny—Mary Magdalene's eyes were like mine." "You are a physician; it is up to you to know what the trouble is—how do you diagnose the case—they are calling Christ—she is a good girl" (looking at nurse).

The patient continued in a catatonic condition; she was resistive, negativistic and mute, held saliva in her mouth, was untidy in her habits. After a few months she improved somewhat, and was transferred to another hospital. There she showed numerous mannerisms, sat with the left arm raised over her head; her muscles were tense and rigid; she showed pronounced echolalia. She was restless and agitated. For some time she continued to grimace, to answer in an incoherent and puzzled way, but improved so much that she was able to be discharged to the care of her sister nine months after her admission to the first hospital.

At home she soon began to have unpleasant feelings; she felt that the bed was sinking, thought that people were looking at her on the streets. She began to harp on her treatment in the first hospital and told impossible tales of her treatment there. She began to refuse food and exercise, and ten weeks after her discharge she was committed to Manhattan State Hospital, and admitted to the clinical service of the Psychiatric Institute.

The patient has now been in hospital one year, and her condition on the whole has shown little change in character, although it has varied in degree from time to time. She blames all her troubles on her association with the two individuals referred to and on the injury to her shoulder. She was taken to the first hospital because she was nervous, and there she received extraordinary treatment; they put snakes in her body, lizards in her stomach, the room moved up and down; she was left for three days without seeing anyone; they flashed bright lights in her eyes. The patient admitted that she was not well on admission to that hospital, but persistently maintained the truth of her distorted memories, and bitterly resented any attempt to explain them, considering that this threw doubt on her veracity.

In discussing the development of the psychosis the patient for some time refused to admit that she had ever been in any way attracted by the man who injured her shoulder. She would not admit at first that her feelings had changed from affection to disgust. She laid a great deal of emphasis on the injury to her shoulder and on the pain which still persisted. As there seemed to be insufficient objective cause for this pain, her emphasis on it was considered to be an endeavour to unload on the physical symptoms the mental discomfort caused by her relations to this man. The electrical reactions were tested and found to be normal. After the second test and after the physician's view of the trouble was placed before her the pain disappeared and has since then remained absent. At the present moment the patient maintains a somewhat bitter attitude towards those who detain her. She thinks that they doubt her word, she says that she is the victim of a foul conspiracy. She keeps very much by herself, and sometimes when annoyed at the nurses she uses very profane language. For many months she refused to go to any entertainment in the hospital on the ground that she had not gone to any when living at home. When finally persuaded to take an entertainment as a doctor's prescription, she enjoyed it thoroughly, and has often gone to others without requiring to be coaxed.

We see in the above case the development of a psychosis in a girl of fair intellectual ability, but living a narrow, self-sufficient life, without evidence of much elasticity and without taking advantage of the ordinary balancing factors in life. Her adjustment, however, to the demands of her life was sufficient so long as these demands were strictly limited. The factors which came in owing to her unfortunate associates were apparently beyond what her mental habits had trained her to cope with, and after a considerable period of disturbed equilibrium she developed a well-marked catatonic excitement. It is interesting to note that the only two samples of her utterances during her catatonic period in the first hospital point to a dominant feeling of humility and disappointment.

Case 5.—The fifth case is that of a woman of forty-one, as to whose disposition as a child little is known, except what she herself tells us. After leaving school she worked out as a domestic, and it was soon observed that she never remained long in one place, although she worked efficiently. She soon began to tell her friends that scandalous rumours were circulating about her; she began to imagine that she was pregnant; she became very religious; several years before admission she imagined that the papers published scandalous stories about her and her bishop. She saw her father's picture in the papers, naked. For two years before admission she went regularly to an employment bureau, but refused all places; she went in order to scrutinize the morality of the other women who went there. For many years she has preached sexual morality to all her friends and acquaintances, and has on this account got into trouble.

The patient claims that she is the Virgin Mary and that she has managed to survive various schemes of the clergy; since she heard a sermon in 1902 she has believed herself to be the only one person ever born free from original sin. The patient gives an interesting account of her life, which shows what a disturbing factor the sexual element has been and how poorly she has been able to adjust herself to this. As a child she conceived a disgust at sexual relations owing to what she had seen in the cramped quarters of her parents' home. About the age of twenty she had a vague feeling of scandalous rumours being afloat with regard to her, then later she had for years compromising abdominal sensations originating in an incident when she had imitated a pregnant woman. These sensations interfered with her actual efficiency; she was less able to work when observed by others. She later had dreams of a sexual nature with religious colouring. Several years before admission she became conscious of her holy nature, and became more and more engrossed in the question of the sexual morality of her neighbours.

In this case we can also see how the mental disorder has been largely due to the disturbing influence of the sexual instinct and the want of a healthy manner of handling this topic. Beneath the surface obviously were prolonged ruminations on the topic; above the surface were prudishness and a reaction of disgust. In the endeavour to compensate for the submerged ruminations we see the various steps—prudishness, then the belief that she was the only pure woman, then that she is the Virgin Mary. The submerged trend broke through in crude sexual dreams.

The presentation of the above conception of dementia præcox is apt to be misconstrued. To those who work continually with the categories of the physiological and the chemical laboratory there seems to be a complete want of contact between the complex disorders of habits and adaptations of individuals, such as are exemplified in the histories recorded above and the physical symptoms which have attracted so much attention. These investigators do not realize that this want of contact is their own product; they have divorced the physical symptoms from the setting in which they occur; they have studied them as if that setting were irrelevant, and on the basis of the results of their studies they have constructed hypotheses which eliminate all dynamic importance from the setting of the metabolism disorder.

The conception of dementia præcox brought forward by Meyer is an endeavour to restore the facts of these investigators to their setting, and to render the study of the disorder more concrete by taking into consideration the whole situation; we are thereby in a position to attain a truer dynamic grasp of the disorder, and have reached a standpoint from which a wide prophylactic movement becomes an inspiring possibility, an important duty. The alienist is thus brought into close co-operation with the sociologist and the educationalist, and he should enter into this co-operation not empty-handed, but with a well-analysed store of clinical material.

Such are the wider issues of the problem of dementia præcox and allied disorders, issues which have been neglected by those workers who have seen in the symptoms of the psychosis merely the expression of the disordered activity of poisoned nerve tissue. This broader conception of the disorder in no way fails to do justice to the observations which have been gathered by those who have taken general paralysis as the paradigma of dementia præcox. It is simply a statement in broad outline of clinical facts, it is not a pretentious hypothesis which professes to explain the detailed steps in the development of the disorder; it introduces no hypothesis as to psycho-physical correlation, nor attempts to determine at any period of the disorder or in relation to any individual symptom the exact importance of the somatic component; it does not pretend to formulate a complete statement as to the actual nature and mutual inter-relation of the somatic changes. All these problems are of distinct importance, and it is only when they are solved that we shall have a complete knowledge of certain aspects of the disorder; work along such lines may yield useful indications as to treatment.

It is hoped that the explicit admission of the value of metabolism studies in their own proper place may obviate the stricture that the conception of dementia præcox outlined above is "too psychological." Alienists should surely be the first to recognise that human biology, if it is to embrace adequately the facts of experience, must be psychological; psychology is not a branch of philosophy, but that department of biology which deals with the most complex reactions.

SUMMARY.

The main argument in this communication may be summarised as follows:—

1. The formation of the provisional group of dementia præcox marks an important advance beyond a mere symptomatological classification; the underlying principle is that for a useful classification one must take into consideration the whole evolution as well as the symptomatology of mental disorders.

2. The general symptomatology of dementia præcox has received much attention and is now sufficiently familiar.

3. Many authors, impressed by the *bizarre*, apparently meaningless, nature of the distorted behaviour and utterances of the patients, and by observations on their disordered metabolism, have regarded the symptoms as merely the incoherent expression of the disordered activity of poisoned nerve tissue. That such a hypothesis is based rather upon *à priori* principles than upon any adequate basis of clinical fact is evident from the extreme vagueness of Kraepelin's own hypothesis.

4. Meyer has formulated a conception of the disorder which takes into consideration many facts which have been neglected by those who have been dominated by auto-intoxication hypotheses. This conception expresses the fact that the psychosis is the culmination of a long-continued period of unhealthy biological adjustments in individuals who constitutionally are apt to meet their difficulties in an inadequate manner. The symptoms cannot be understood unless a thorough analysis is made of the constitutional traits of the individual, of his habits in the widest sense of the term, and of the actual difficulties which have precipitated the onset of the psychosis. Jung has traced in detail some of the steps in the distortion of the patient's behaviour and ideas.

5. This biological conception of dementia præcox encourages the physician to take a practical attitude, and, after a thorough analysis of the situation out of which the symptoms have arisen in the individual case, to push his therapeutic activity wherever the circumstances are open to modification, unhampered by any hypothesis which excludes a dynamic psychology.

6. This conception is still more fruitful in the indications it furnishes for prophylaxis along educational and sociological lines.

7. The same principles which have led to the above formulation of the nature of dementia præcox should also be applied in the study of the other psychoses.

A CASE OF SUBCORTICAL HÆMORRHAGE LIMITED TO THE POST-CENTRAL GYRUS.

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(With Plate 14.)

THE delimitation within recent years of the cortical motor area to the anterior central gyrus has aroused fresh interest in the functions of that part of the cortex lying immediately posterior to the fissure of Rolando. This post-Rolandic area (post-central gyrus) is now generally regarded as being sensory in function, the evidence in favour of this view being based partly on histological studies of the cerebral cortex and partly on the investigation of certain cases of hemianæsthesia where the lesion was limited to this convolution. And more recently Cushing[1] has shown that on stimulating the post-central gyrus in two of his patients they expressed themselves as experiencing the sensation of a definite tactile impression which they referred to one or other limb according to the cortical area stimulated.

The case that I have now to record confirms in a general way this view as to the sensory function of the post-central gyrus, but here, as in several other such cases, the hemianæsthesia was accompanied by a considerable degree of hemiparesis. It is to be noted, however, that in none of these cases were degenerate fibres found in the motor pathway.

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[1] Cushing, *Brain*, Vol. xxxii. (1909), p. 44.

The patient was a man aged 30, a miner by occupation, and he was under observation from the date of the onset of his hemiplegia (September 11) till the time of his death, November 9, 1908. His history is as follows:—When seventeen years old he had an attack of rheumatic fever which laid him up for sixteen weeks. He made a good recovery, and shortly afterwards joined the army. A year later he had another attack of rheumatism, which kept him in bed for seven weeks, and after this he was invalided out of the service. He said that he was quite able for his work at this time; but in July 1908 he got a cold, and since then he had suffered from palpitation and breathlessness on any exertion. These symptoms, taken in conjunction with the fact of the discharge from the army, are very suggestive of there having been a valvular lesion of the heart at this time.

On the 11th September, while on the way to his work, he felt a curious sensation in his head. He sat down to rest for a minute or two, and then he discovered that he had complete loss of power in the left arm and to a less extent in the left leg. He had to be carried home, and within a few hours was sent into hospital. On admission there was seen to be a left-sided hemiplegia, most marked in the arm, less marked in the face, and less still in the leg. Both eyebrows could be raised about equally well, but the right eye was more firmly closed than the left. The lips could be brought together fairly well, as when whistling, but when told to lay bare the teeth the paralysis at the left angle of the mouth became very apparent. The tongue when protruded deviated to the left, but with an effort the patient could move it over to the right side of the mouth. The head could be rotated to either side, but the rotation to the right was apparently carried out with greater difficulty than rotation to the left. There was no paresis of the movements of the eyeballs. The pupils were equal, and reacted to light and to accommodation. The mental condition was unimpaired, and the patient readily understood all that was said to him. Speech was rather thick, and the patient spoke with some difficulty; the fault, however, was evidently one of articulation, due to lack of control of the tongue and lips. The left arm was quite powerless and limp. The tendon reflexes were equal in both arms and not definitely exaggerated. There was some paresis of the left leg. The heel could be raised from the bed, and the limb could be flexed and extended at hip, knee and ankle; but the patient could not bear his weight on this leg, and when he attempted to stand it gave way under him. There was no rigidity of the leg. Both knee jerks were slightly exaggerated, the left rather more than the right. There was no knee clonus and only a degree of clonus at the left ankle. The plantar reflex was present on both sides; it was definitely flexor on the right and slightly extensor, though less marked on the left. There was a degree of anæsthesia for tactile, thermal and painful impressions on the left side, most marked in the arm, rather less so in the leg, and not definitely present in the face. The sense of posture did not seem impaired in either arm or leg.

The cardiac percussion area was considerably increased to the left, extending 1¾ inch beyond the nipple line, and there was a double aortic murmur. The lungs were normal. The urine contained both albumen and blood, and its sediment red blood corpuscles and a few granular casts.

In twenty-four hours the paralysis in the left arm was much less marked. The arm could be flexed and extended at elbow and wrist, and the hand could be raised to the head. The patient could not, however, flex or extend the fingers. Otherwise he was much the same as on admission, and in particular the anæsthesia showed no improvement.

In the next three weeks there was still further improvement as regards the paralysis. By the end of that time the movements of the face were almost equal on both sides, and there was scarce any trace of the palsy. All the movements of the arm were now well carried out, and except that the grip of the left hand was not so strong as that of the right there was little sign of paralysis. The patient could walk quite well, there being no dragging of the left foot or other sign of paresis in this limb. The left knee jerk was rather more active than the right, but there was neither knee nor ankle clonus. The right plantar reflex was active and flexor: the left was less active, and neither definitely flexor nor extensor. There was still a degree of anæsthesia in the left arm and very slight in the left leg. By the end of other three weeks all signs of paralysis had disappeared, but there was still some slight anæsthesia of the

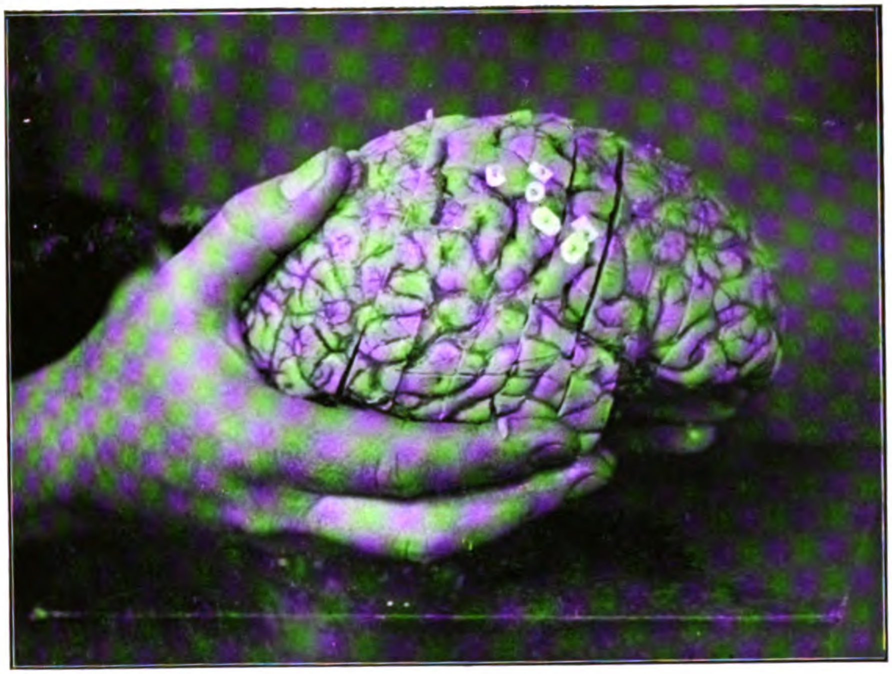

FIG. 1.

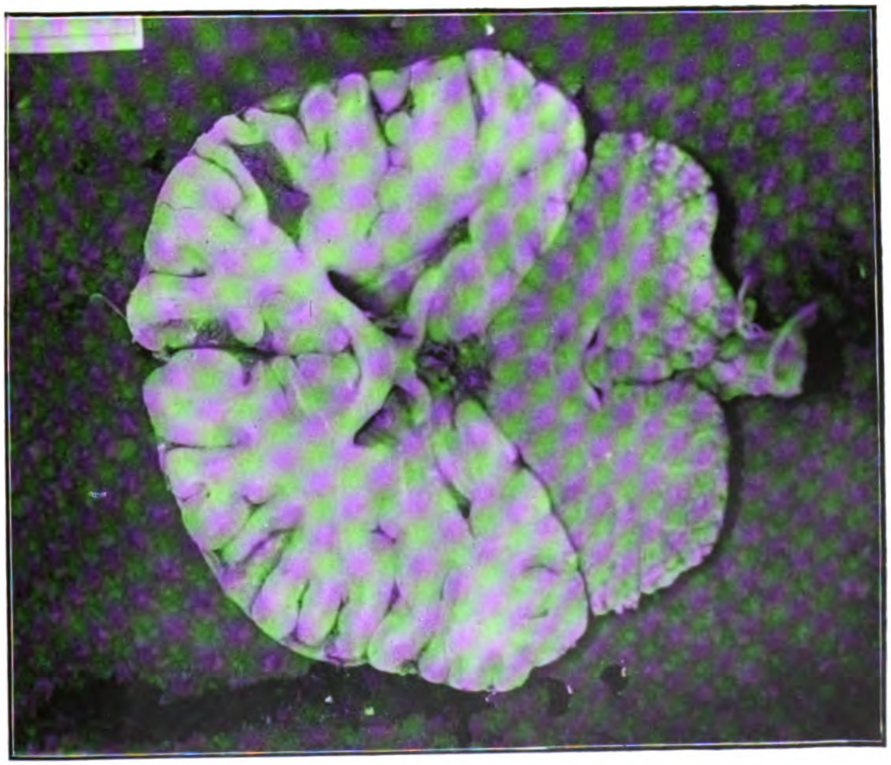

FIG. 2.

To illustrate Dr Hunter's Paper.

left arm. The left plantar reflex was now flexor, but it was still less active than the right.

Ever since admission to hospital the temperature had shown a distinct febrile reaction, often being as high as 102° ; and this persisting, one suspected that the patient might be suffering from an ulcerative endocarditis of a mild type. Early in November signs of acute peritonitis supervened, and the patient died on November 9th, just two months after the onset of the hemiplegia and hemianæsthesia.

At the post-mortem examination the two layers of pericardium were found firmly adherent throughout. The heart was greatly enlarged, with great hypertrophy of the left ventricle. There were numerous vegetations, with ulceration, of the mitral and aortic cusps. The abdominal cavity showed signs of a generalised septic peritonitis, which was apparently due to a ruptured appendix.

The external surface of the brain presented no abnormality. The brain was hardened in formol and vertical sections cut, as indicated in Fig. 1. On examining these sections a subcortical hæmorrhage was seen on the right side extending through three of the sections. It was found to be confined to the post-central convolution, and in Fig. 1 its topography is indicated on the surface of the brain. The vertical measurement from the longitudinal fissure (mid line) to the upper limit of the hæmorrhage was 5 cm., and from this latter point the hæmorrhage extended for 4 cm. down the post-central gyrus. Fig. 2 shows the hæmorrhage in vertical section, the section here represented being that of the posterior surface of the central of the three sections containing the hæmorrhage. (It lies just anterior to the most posterior of the pins shown in Fig. 1.)

There is little one need add to this case in the way of commentary. The hæmorrhage, it is to be noted, was located in that part of the post-central convolution commonly regarded as the " cortical arm centre " ; and we have seen that the anæsthesia was chiefly limited to the left arm, the left leg being but slightly affected. But even in the arm the anæsthesia was not by any means complete. This, however, is as we most often find it in cortical and subcortical lesions, being in contrast to the much more complete hemianæsthesia which one meets with when the lesion is in or near the internal capsule. And the conclusion to be drawn would seem to be that the post-central gyrus is not the "end-station" for more than a proportion of the afferent fibres coming from the opposite side of the body; and this case suggests, either that certain sensory impulses end at the level of the internal capsule—*e.g.* in the optic thalamus—or that the cortical sensory area for the arm has wider limits than that of the "arm area" of the post-central convolution. It is to be noted, however, that in this case just recorded there is a narrow margin of white matter lying at each side of the lesion, and it is quite conceivable that if the grey matter forming the lateral aspects of the post-central gyrus is, like the surface part of the convolution, sensory in function, possibly some of the fibres going to these lateral areas of grey matter were not interrupted by the hæmorrhage, which without doubt destroyed the fibres ending in the exposed aspect of the convolution.

As to the hemiparesis, its speedy recovery, joined to the fact that two months later no degenerate fibres were to be found in the pyramidal pathway, is against the view that motor fibres arise from this post-central convolution. The paresis was doubtless due to the presence of the hæmorrhagic lesion "disturbing" the adjacent anterior central gyrus, either by direct pressure or otherwise.

Description of Figures.

Fig. 1.—Right hemisphere of brain: the pins indicate the extent of the hæmorrhage. The two pins with the square heads are inserted into the fissure of Rolando.

Fig. 2.—Vertical section of brain showing subcortical hæmorrhage in post-central convolution.

Abstracts

ANATOMY.

ATTEMPT AT A SYSTEMATIC INVESTIGATION OF THE (508) PATHS OF CONDUCTION OF THE SYMPATHETIC SYSTEM. (Versuch einer systematischen Untersuchung der Leitungsbahnen des sympathischen Nervensystems.)

MICHAILOW, *Pflüger's Arch.*, Bd. 128, Hft. 6, 7, 8, and 9, 1909, p. 283.

THE literature regarding the sympathetic system is detailed, and the views of the various authors who have investigated the subject as to the roots by which the preganglionic fibres leave the spinal cord are collected and given in the form of tables. The different opinions as to the cells of the spinal cord from which the fibres arise are represented in a similar way.

A minute anatomical description of the nerves in the neighbourhood of the stellate ganglion and inferior cervical ganglion in the dog is given from the author's observations and the branches of the *Ansa Vienssenii*, the *rami communicantes*, etc., are figured.

The object of research is the study of the paths of conduction in the region of the stellate and inferior cervical ganglia. Young and lean dogs have been chosen, a hypodermic injection of morphine administered and chloroform anæsthesia employed. The incision required is narrow and deep, and the region is illuminated by an electric lamp on the forehead.

Fifteen experiments are detailed in which particular nerve twigs were ligatured, the fibres allowed to degenerate and the degenerated paths investigated by Marchi's method, as modified by Bechterew.

Six groups or systems of sympathetic conduction paths are found to exist in relation to the stellate and inferior cervical ganglia.

Fibres forming centrifugal paths are found to arise from cells in the spinal cord, and possibly also in the spinal ganglia. They leave the cord through the roots of VII. cervical and I. and II. dorsal nerves and pass by their *rami communicantes* to the stellate ganglion. Hence they proceed, partly in the thoracic continuation of the sympathetic nerve, partly by way of different branches of the *ansa*, to the inferior cervical ganglion. From this ganglion these fibres pass, some upwards in the vago-sympathetic, some to the heart and other organs.

Fibres forming recurrent paths arise from cells of the spinal cord and also partly of spinal ganglia. They leave the cord by the roots of VII. cervical and I. and II. dorsal nerves and pass to the stellate ganglion. From here they proceed through the *rami communicantes* to I. dorsal and VIII. and VII. cervical nerves, through the roots of which they return to the cord. Here they form ascending and descending systems in the direct cerebellar, Löwenthal's, Goll's, and Burdach's tracts.

Fibres forming centripetal paths arise from cells of the stellate, superior cervical, and inferior cervical ganglia, and pass, by the *rami communicantes*, to I. and II. dorsal, and VIII., VII. and VI. cervical nerves, and by the *ramus vertebralis* to V., IV. and III. cervical nerves, through the roots of which—in some cases the anterior, in others the posterior—they enter the cord. In the cord they form an ascending system in the direct cerebellar, Burdach's, Goll's and Löwenthal's tracts, and descending systems in the direct cerebellar, Löwenthal's, Burdach's, the intermediate cerebellar, and the antero-lateral tracts.

Fibres forming spinal sympathetic paths arise from cells of the superior and inferior cervical ganglia. They pass through various branches of the *ansa* to the stellate ganglion and thence to I. dorsal nerve. They enter the posterior root of this nerve but do not reach the cord, ending in a pericellular network among the cells of the first dorsal spinal ganglion.

Fibres forming internal sympathetic paths arise from cells of the superior and inferior cervical ganglia and the stellate ganglion. They proceed in different directions through the branches of the *ansa* to various dorsal sympathetic ganglia and partly in the cervical vago-sympathetic to the superior cervical ganglion.

Fibres forming external sympathetic paths arise from cells of the stellate ganglion. They proceed, on the one hand, through the *rami communicantes* to VI. and VII. cervical nerves, and by way of these nerves to the periphery; on the other hand they pass through branches of the *ansa* partly to the cervical vago-sympathetic and partly to the heart and other internal organs.

W. A. Jolly.

NEW METHOD OF STAINING NEUROGLIAL CELLS AND (509) **FIBRILS.** Lhermitte, *Rev. Neurol.*, Aug. 15, 1909, p. 975.

This method is claimed to be an absolutely elective one.

Pieces of nervous tissue are fixed in 10 per cent. formalin for several days, and are then transferred to 5 per cent. They are frozen and cut into sections, then washed in tap water. They next are put into a cold saturated solution of sublimate for two hours, and then into the osmo-chromo-acetic fixing solution for twelve hours. Its formula is:

Osmic acid (1 per cent.) . .	3 grams.
Chromic acid (1 per cent.) . .	35 „
Acetic acid (2 per cent.) . .	7 „
Distilled water	55 „

Sections may lie in this as long as three days. Wash the sections in distilled water. Cover a slide with a wet piece of cigarette paper the exact size of the slide: place the section on this and stain it in 1 per cent. Victoria blue, added drop by drop over a bunsen burner till vapour rises. Repeat this two or three times, cool, throw off excess of stain, and pour Gram's solution on the section, repeating this two or three times also.

Differentiate by pouring on to the section, which is still adherent to the cigarette paper and the slide, a mixture of equal parts of xylol and aniline oil. Remove the paper with the section and transfer the latter to a fresh dry slide by placing it face downwards on this slide: it usually is found to adhere satisfactorily. Proceed with the differentiation until the section is absolutely transparent. Wash in xylol and mount in balsam or dammar.

S. A. K. WILSON.

PHYSIOLOGY.

A CRITICAL STUDY OF THE SENSORY FUNCTIONS OF THE (510) MOTOR ZONE (PRE-ROLANDIC AREA); MORE ESPECIALLY STEREOGNOSIS.

HOPPE, *Journ. Nerv. and Ment. Dis.*, Sept. 1909, p. 513.

BY means of the literature of recorded cases, and of three personal cases here described, Hoppe attacks the problem of the cortical localization of stereognostic function. Pathological lesions of the Rolandic region do not cause defects of this function, though extirpations of areas of that region do, perhaps owing to the suddenness of the lesion, which does not allow compensation to take place. Clinically a stereognosis is much more closely associated with affections of the parietal lobe, though not necessarily, as Mills would maintain, of the superior parietal, than with affections of the pre-Rolandic zone. ERNEST JONES.

THE PSYCHO-PHYSIOLOGY OF THE HUMAN CEREBRUM, (511) AND ITS BEARING ON THE RECENTLY PUBLISHED RESEARCHES OF PIERRE MARIE ON APHASIA.

JOSEPH SHAW BOLTON, *Liverpool Med.-Chir. Journ.*, July 4, 1909, p. 224.

IN this paper the subject under discussion is considered from the aspect of the reader of general medical literature rather than from that of the physiologist or neurologist. The views of Marie are detailed as far as is possible in a brief and non-technical manner.

The subject of cortical localisation and cerebral function is then considered, after which the nature of language is discussed. The processes of perception and conception are described, and the symbolic value of the words or " numerals " of which language is composed is indicated. It is then shown that names are not percepts or concepts, but are merely symbols which enable former active processes of perception or conception to be recorded and future acts of perception or conception to be evolved. The language mechanism, with its sensori-memorial and motor-memorial bases, is then described, and examples of the fairly common mechanical mode of employment of this mechanism are given. It is shown that during the employment of the complex mechanism of language, in such a manner *that it may possess meaning*, there necessarily occurs an active associational participation on the part of practically the whole mantle of the cerebrum.

The manner in which words arise into consciousness is then considered. " A word, therefore, in my opinion, invariably arises in a sensory sphere, and it may arise in one of three ways. It may arise in consequence of sensorial stimulation; in normal voluntary thought it arises through the preliminary aid of the psychomotor centre; or, thirdly, it may arise spontaneously in one of the sensory spheres, in which case it is a hallucination, which may or may not be distinguished by the subject from a true result of sensorial stimulation."

The following are the chief points to which the attention of the reader is drawn :—

Granted that the language mechanism and the whole post-Rolandic portion of the cerebrum are intact, sub-evolution or dissolution of the prefrontal region of the cerebrum interferes with or prevents the higher voluntary functions of attention and inhibition, and of general co-ordination, selection, and control of the processes of cerebral association. Such a person may be a lunatic or a dement, but he is not an aphasic.

Loss of the whole psychomotor area would entirely prevent voluntary thought; and partial loss, involving the portion concerned with acquired elaboration of the laryngeal movements, would cause voluntary thought to be at any rate extremely difficult of performance. Broca's area is probably in many persons a part of this, and transient loss of speech with transient interference with voluntary thought would thus often result from a local lesion in this region. The purest transient forms of classical motor aphasia thus must exhibit intellectual impairment, if this be sought by the methods of the alienist.

A lesion of the convolutions surrounding the posterior end of the fissure of Sylvius affects, not the visual and auditory word centres, but cerebral cortex of highly complex associational (*i.e.*

" intellectual ") value ; and this is the true reason why " sensory " aphasics exhibit impairment of the intellectual functions.

The main thesis of Marie, that all aphasics exhibit intellectual impairment, is thus true. It is not, however, probable that motor aphasia is invariably the result of anarthria + sensory aphasia, although, on the other hand, it is doubtless true that anarthria + sensory aphasia necessarily gives rise to the symptomatology of classical motor aphasia.

It is impossible to accept Marie's contention that Broca's speech area " ne joue aucun rôle spécial dans la fonction du langage." In the case of many persons his statement is doubtless true, whereas in that of others Broca's area is probably part of the educated psychomotor area, in which case its permanent loss would result in temporary " motor aphasia " with temporary interference with voluntary thought.

The paper concludes with a short reference to the influence of sense deprivation on cerebral function. It is shown that cases of deprivation in early life of the senses of hearing or sight afford valuable illustrations of the importance of the language mechanism to the psychic functions, and also well indicate the ingenious manner in which the cerebrum is able to replace such serious disabilities. AUTHOR'S ABSTRACT.

FURTHER COMMUNICATION ON THE REGENERATIVE POWER (512) OF THE ROOT GANGLIA IN EARLY EXTRA-UTERINE LIFE. (Di nuovo sul potere regenerativo del prolungamento dei gangli intervertebrali nei primi tempi della vita extra uterina.) G. D'ABUNDO, *Riv. ital. di Neur., Psich. ed Elettroter.*, F. 7, 1909.

THE author in a previous communication showed that in new-born animals the tearing of a nerve root does not necessarily cause degeneration of the nerve cells of the ganglion concerned, nor of the fibres in their spinal course. In this second paper he investigates the regeneration of the medullary prolongations of the intervertebral ganglia, and shows that in twenty-four hours' old cats regeneration readily occurs after the tearing of the intradural portion of the medullary prolongations. F. GOLLA.

PSEUDO-FATIGUE OF THE SPINAL CORD. LEE and EVERINGHAM, (513) *Amer. Journ. of Physiol.*, Vol. xxiv., No. 4, 1909, p. 384.

IT has usually been considered that the brain and spinal cord are more susceptible to fatigue than are the nerves and muscles. The authors have studied the question, employing frogs and turtles. The cord in the latter is exposed and stimulated above the sciatic centre, and contractions are recorded of an isolated muscle supplied by the sciatic nerve. Contractions are also recorded of the same muscle when acting under the reflex influence of stimulation of the skin. The contractions reflexly evoked are much the greater although the two impulses make use of the same centrifugal nerve mechanism involving the same motor neurone. The explanation offered is that stimulation of the cord arouses both motor and inhibitory impulses, and that the contraction is the algebraic resultant of the effects of the two. Direct stimulation of the cord is very inefficient for bringing into action the latent powers of the motor neurones, and the apparent fatigue exhibited by a tracing of contractions caused by repeated stimuli applied to the cord is no true evidence of fatigue of the spinal cord.

Sherrington has shown that when an efferent path is common to two or more afferents, stimulation of one of the latter may be effective after stimulation of another has ceased to produce motor results. Such " fatigue " is not genuine or complete fatigue at all. It is a temporary condition, from which recovery is easy and rapid.

When apparent fatigue has resulted from repeated electrical stimulation of the cord in the turtle, pinching the skin produces huge contractions of the same muscle. No evidence of fatigue is obtained when a muscle is caused to contract during more than an hour by skin stimuli repeated at 3 sec. intervals. The results obtained by direct stimulation of the cord do not demonstrate in any way early fatigue of the central nervous system.

The reflex contractions resulting from the stimulation of afferent nerves after long-continued cord stimulation which has resulted in the production of pronounced pseudo-fatigue are usually more intense than before the stimulation of the cord has occurred. The problem of the relative resistance to fatigue of the central nervous stysem is still unsolved. It would seem to accord with many known facts that its resistance should be high. W. A. JOLLY.

THE INNERVATION OF THE CORONARY VESSELS. C. J. (514) WIGGERS, *Am. Journ. of Phys.*, July 1, 1909, p. 391

THE conclusion arrived at by the writer is that the coronary vessels are not influenced merely in a passive manner by the blood pressure and the massaging action of the heart, but that they possess a nerve control, and this is supported by the following evidence:—

1. The coronary vessels react to adrenalin by constricting, when the simultaneous effect on the heart is eliminated.

2. Stimulation of the vagus nerve causes in the dog a decreased outflow from a wounded heart vein. This happens in spite of the fact that changes in the blood pressure, contractions of the auricle and ventricles, and back flow do not occur. J. H. HARVEY PIRIE.

TENDON AND CUTANEOUS REFLEXES IN INFANTS. (L'étude (515) sur l'état des réflexes tendineux et cutanés chez les nourissons.)

NOICA and MARBE, *C. R. de la Soc. de Biol.*, T. 65, 1908, p. 640.

FROM observations made at the Tarnier Maternité on eighty children whose ages ranged from two days to a year and over, the writers came to the following conclusions:—The knee and ankle jerks are well marked in the newly born. Bychowski's inability to find the ankle jerks present before the age of nine months (*v.* this *Review*, 1908, p. 237) is attributed to his having examined them under unfavourable conditions. The reflexes in nurslings should be tested during suckling, for then only can complete muscular relaxation be obtained. The abdominal reflexes are rarely met with until the age of five months, after which time they are almost constant. As a rule the three divisions are present at once, but sometimes the upper only or the upper and the middle, but never the lower alone. The cremasteric and gluteal reflexes appear later than the abdominal, for even at the age of sixteen months they are not invariably found. J. D. ROLLESTON.

THE SIGNIFICANCE OF THE ADDUCTOR REFLEXES. (Die (516) Bedeutung des Adduktorenreflexes.)

KELLER, *Deutsche Ztschr. f. Nervenheilk.*, 1909, Bd. 37, S. 49.

KELLER examined the adductor reflex in one hundred cases of functional and organic nervous diseases, and comes to the following conclusions:—

1. The homolateral adductor reflex is exactly analogous to the other tendon reflexes.

2. The pathological and clinical significance of the adductor reflex consist, not so much in the intensity of the muscular twitch as in the extent of the reflexogenous area. In conditions which are associated with diminution of reflexes, the reflexogenous area is diminished or absent, and in any case does not extend beyond the upper third of the tibia, whilst in cases of increased deep reflexes, whether functional or organic in nature, the reflexogenous area may extend to the middle of the foot.

3. The extent of the reflexogenous area from the adductor reflex

is proportional to the general excitability of the deep reflexes; and conversely

4. The presence or absence of the adductor reflex, and the size of its reflexogenous area, are not in any way connected with diseases of the pyramidal cells or with the Babinski phenomenon.

The author does not discuss the crossed or contra-lateral adductor jerk. PURVES STEWART.

STUDIES IN THE REFLEXES OF THE GUINEA-PIG. 1. THE (517) SCRATCH-REFLEX IN RELATION TO "BROWN-SÉQUARD'S EPILEPSY." T. GRAHAM BROWN, *Quart. Journ. of Exper. Physiol.*, Vol. ii., No. 3, p. 243.

AN historical summary of the literature of Brown-Séquard's epilepsy, with special reference to the "scratch phenomenon" and the fully-developed fit from the date of Brown-Séquard's earliest observations in 1850 up to the present time, precedes the author's account of his own research.

The method adopted in producing the attacks was to excise from 0·5-1 cm. of the right sciatic. The phenomena in successive stages of the fits are depicted in several photographs. Graphic records of the "scratch movements" were obtained and are figured in the article.

The author summarises his results and conclusions as follows:—

1. Of 20 guinea-pigs 14 have survived the operation of resection of a portion of the right great sciatic nerve for a sufficient length of time, and each one of these has exhibited the movements described by Brown-Séquard as "epilepsy." None of these have shown "spontaneous" attacks or the condition of "blepharospasm."

2. The movements were evoked by stimulation of a special area of the skin, the adequate stimulus being mechanical pressure. Stimuli consisting of loud sounds, the vibrations of which ranged between 32 and 16,000 per second, of a bright beam of light directed into the eye, and of a warm beam of light directed on to various parts of the special area of skin, were inadequate. Electrical stimuli given in the form of galvanic shocks were inadequate, as also possibly they were when given in the form of rapid double Faradic shocks.

3. The boundaries of the special zone of skin are larger than those given by Brown-Séquard. It almost invariably extends further back than the posterior border of the scapula, while it may extend as far forward as the border of the nostial and the edge of the lower lip in the middle line.

4. Changes in the condition of this area and also in that of the

lower limb of the side of the lesion, similar to these described by Brown-Séquard, were observed.

5. The movements, which consist of tonic contraction of the muscles of the neck and back, and of clonic movements at the hip-joint, occur in two stages. In the first of these the movements are confined to the side of the lesion, while in the second they spread to the opposite side.

6. The rhythm of the clonic movements observed lay between the limits of 8 and 16 beats per second. The rhythm was slower in the larger animals. It was also slower towards the end of one reflex, and varied when the reflex was evoked from different points in the special area.

7. The clonic movements, as studied in graphic tracings, show a marked resemblance in many of their features to the scratch reflex observed in the spinal dog.

8. They differ from this reflex in the overflow to the opposite side, and in the phenomena of alternation, as well as in the degree of the tonic factor.

9. Once the clonic movements have appeared, they become progressively more extensive up to a certain point as the condition persists. The excitatory value of the maximal stimulus rises.

10. The clonic movements may be inhibited by stimulation of the skin on the abdomen of the opposite side by mechanical pressure. In the early stages this inhibition comes on rapidly, but persists for some time after the cessation of the inhibiting stimulus. In the later stages it is established less rapidly, but lasts a shorter time after the stimulus has stopped. Towards the end of a long reflex response the inhibiting stimulus may only affect the clonic movements by showing the rate of the beats. When the inhibition of the clonic movements is complete, there is also an inhibition of the tonic contraction of the muscles of the side and hip.

EDWIN BRAMWELL.

THE PUPILLARY LIGHT REFLEX. (A quel moment de la vie est susceptible de se produire pour la première fois la refléxe pupillaire à la lumière.)

(518) M. A. MAGITOT, *Presse Méd.*, July 21, 1909, p. 516.

THE author contributes an additional fact to the study of the localisation of the nervous centre for the sphincter iridis. According to his investigations upon the prematurely born the iris is immobile at the beginning of the fifth month, although the retina and optic nerve are capable of functioning, as shown by the contraction of the eyelids under the influence of light. The pupillary reflex appears for the first time at the end of the fifth month.

At this period the pupil is large, the iris very narrow, and the contraction appears as a slight vermicular movement. Following on this there occurs by stages an increase in extent and rapidity of contraction, which reaches its maximum towards the end of the eighth month. The appearance of the reflex is correlated with the differentiation of the cone-cells or rod-cells in the retina. The optic nerve fibres have not yet acquired their myelin sheaths, but, in contradistinction to the teachings of Flechsig, are capable of functioning.

. The author argues from the fact that at the time of appearance of the reflex the ventral layers of the main bodies of the oculomotor nuclei are alone clearly differentiated, that it is here that the nervous centre for the sphincter is most probably to be found, and not in the dorsal layers, nor in the Edinger-Westphal nuclei, nor in the nuclei of Darkschewitsch and Bechterew, the first of which are but slightly differentiated and the three last not at all.

J. P. LOWSON.

PSYCHOLOGY.

GUY DE MAUPASSANT. A STUDY IN PATHOLOGICAL (519) PSYCHOLOGY. (Guy de Maupassant. Étude de psychologie pathologique.) L. LAGRIFFE, *Ann. Med.-Psych.*, T. viii., 1908, pp. 203 and 353, and T. ix., 1909, pp. 5 and 177.

IN opposition to Lacassagne and Rémond and Voivenel (*v. Review*, 1908, p. 574), Lagriffe denies that Maupassant suffered from systematised delusional insanity, and thinks that he was a victim of general paralysis. Infection took place about 1879, and an eye disease from which he suffered the following year was probably syphilitic iritis. Alcohol may have been the chief factor in the production of his hallucinations, a striking description of which is given in the story *La Horla*, but was not the only one, as in Musset's case (*v. Review*, 1908, p. 329). The onset of general paralysis in 1885 was preceded by a stage of excessive literary activity, five volumes of short stories and one long novel being written within a year. It was a remarkable fact that concurrently with the change in his character the naturalism of his earlier novels was replaced by idealism. Death did not occur till 1894. The unusually long course is attributed by Lagriffe to neuropathic heredity. The same cause accounts for the phobia of insanity which haunted Maupassant, and is illustrated in several of his stories. For a long time the disease remained chiefly somatic. Attacks of migraine and neuralgia and pains in the joints and limbs made him believe that he was suffering from rheumatism. At a later stage the characteristic symptoms of paretic dementia supervened.

J. D. ROLLESTON.

PATHOLOGY.

ON THE PLASMA CELLS AND THE REACTION PHENOMENA (520) IN CEREBRAL CYSTICERCOSIS. (Sulle plasmacellule e sui fenomeni reattivi nella cisticercosi cerebrale.) GIOVANNI PAPADIA, *Riv. di Patol. nerv. e ment.*, Vol. xiv., F. 8, 1909.

UNDER the persistent toxic stimulus of the parasite a complex reaction of various histological elements takes place. In the neighbourhood of the cyst are found masses of polymorphonuclear leucocytes and giant cells.

The two internal strata of the adventitious cyst wall are composed of connective tissue elements. The external stratum is composed of plasma cells, lymphocytes, and eosinophil cells, which are not linked by any transitional forms with each other. Transitional forms are only observed between the plasma cells and certain elements of the connective tissue that require a strong basophil reaction. The deductions drawn from these observations are strongly against a hæmatogenous origin of plasma cells, and are in favour of their histogenetic origin. F. GOLLA.

DISEASE OF THE CENTRAL NERVOUS SYSTEM IN DEGENERATIVE POLYNEURITIS. (521) (Ueber die Erkrankung der Zentralnervensystems bei Polyneuritis degenerativa.) HERZOG, *Deutsche Ztschr. f. Nervenheilk.*, 1909, Bd. 37, S. 122.

HERZOG'S first case was in a man of 25, with a history of syphilis acquired five years previously, who developed an acute paralysis of the legs preceded by severe pains. In four days the patient lost the power of walking, then the right pupil became sluggish, and deglutition became difficult. Other cranial nerves became implicated, including the seventh motor division of fifth, twelfth, and third. Retention of urine was present. The upper limbs were also weak. The temperature was irregular. Slight anæsthesia was present in the lower limbs. The nerves and muscles were tender on pressure, and the deep reflexes diminished. The patient gradually improved, and a year and a half later was found to have spastic paresis of the lower limbs, with extensor plantar reflexes and increased knee-jerks. Now, four and a half years after the original onset, he is still spastic and has bladder trouble.

The second case, in a man of 48, rapidly developed paralysis of the legs, with absence of deep reflexes and electrical reactions of degeneration in the paralysed muscles. There was also paralysis of the right face and of the right external rectus. Then appeared anæsthesia of the legs and trunk, paræsthesia in the right hand and in the face, and violent pains—all indications of a polyneuritis. Moreover, there were afterwards the signs of Kersakoff's psychosis. The bladder was distinctly affected in the form of retention. The patient died two and a half months from the onset from malnutrition and fever.

Post-mortem the appearances were degenerative in nature, not inflammatory. There was not only well-marked degeneration in the peripheral nerves and in the muscles, but also degeneration of the long centripetal exogenous fibres of the posterior column, and also of part of the endogenous centripetal fibres, such as the lateral cerebellar tracts and the cornua tracts. No changes were found in the cells of the spinal ganglia, nor in those of Clarke's column. Changes were present, however, in the antero-cornual cells and in the anterior roots.

The author holds that poisons which produce neuritis also cause a primary systemic degeneration in the central neurones which are fundamentally connected. PURVES STEWART.

CONTRIBUTION TO THE HISTO-PATHOLOGY OF DISSEMINATED SCLEROSIS.

(522) **(Contribution à l'histo-pathologie de la sclérose en plaques.)** MARINESCO and MINEA, *Rev. Neurol.*, Aug. 15, 1909, p. 957.

THE authors, employing Cajal's and Bielschowski's methods, corroborate the often demonstrated fact of the persistence of some or many axis cylinders in the sclerotic patches, but they do not consider it either an essential or a specific feature. The occurrence of secondary degeneration can no longer be denied, though it may not concern more than a few of the fibres which go to make up any given bundle. Regeneration is a constant feature of the pathological anatomy of disseminated sclerosis. In the terminal form, at the thickened extremity of some axis cylinders is found a number of fine filaments, ending in little buttons. In the collateral, and more common, form, fine new axis cylinders spring from the side of a given axon, terminating often in a little button, and by their number and delicacy differing from the normal collaterals of the axon. S. A. K. WILSON.

THE PATHOLOGICAL HISTOLOGY OF MENTAL DISEASES.

(523) **(L'histologie pathologique des maladies mentales.)** CH. LADAME (of Geneva), *L'Encéphale*, Feb. 10, 1909.

A BRIEF résumé of the subject, based on the microscopical examination of one hundred cases. The author believes that even in the so-called functional psychoses there must be some structural alterations; the difference between the organic and the functional psychoses consists only in a difference of intensity and of localisation of the morbid process. The lesions in the organic psychoses are essentially interstitial; the lesions in the functional psychoses are essentially parenchymatous (involving the neurones and the neuroglia). After some general considerations, in the course of which the author emphasizes the necessity of studying the localisation of lesions, not only according to regions of the cortex but with reference to its architectural strata, the various psychoses are referred to in some detail. C. MACFIE CAMPBELL.

CLINICAL NEUROLOGY.

CONTRIBUTIONS TO MYOPATHOLOGY. (Myopathologische Beiträge.)

(524) STEINERT, *Deutsche Ztschr. f. Nervenheilk.*, 1909, Bd. 37, S. 58.

STEINERT gives the clinical records of six cases of myotonia or Thomsen's disease, and emphasises the fact that this disease is a distinct morbid entity, myotonia being a primary phenomena, and muscular dystrophy being occasionally superadded. One of his cases died, and he appends a study of the anatomical and pathological appearances, of which the most interesting points are a widespread cirrhosis of the muscles, together with a tabiformic degeneration of the posterior columns. PURVES STEWART.

A CASE OF TRANSIENT ATAXY FOLLOWING DIPHTHERIA.

(525) H. O. BUTLER, *Lancet*, ii., 1909, p. 532.

THE ataxy, which was due to peripheral neuritis, occurred in a man aged 26, five weeks after the onset of a severe attack of diphtheria, and was associated with palatal palsy. J. D. ROLLESTON.

SYPHILITIC PROGRESSIVE SPINAL MUSCULAR ATROPHY.

(526) MERLE, *Rev. Neurol.*, July 30, 1909, p. 877.

THIS case, observed clinically in the service (Professor P. Marie), and substantiated by a careful examination of the pathological material in the Bicêtre laboratory, is of considerable interest, and the article will repay reading in its entirety. A man aged 64 contracted syphilis at the age of twenty-one, and twenty-five years later he began to show ill-defined symptoms of weakness in his legs and soon after in his arms, symptoms which increased slowly but steadily in extent and degree. The extremities of the limbs were chiefly affected, the small muscles of the hand, the forearms, the feet and legs wasting in a global fashion. The Achilles jerks were absent, the knee jerks very feeble. The pupillary reflexes were normal: no ataxia, lightning pains, alterations of sensibility or impairment of sphincters were discoverable.

Post-mortem the condition was one of slight diffuse meningo-myelitis, with no systematised degeneration in any of the fibre bundles, and with gross disease of the anterior horn motor cells. At many levels, more especially in the cervical cord, these had entirely disappeared, and those that were left were profoundly altered. The author enhances the interest of his paper by a lucid discussion of the significance of these facts, and emphasises the desirability of revising our conceptions of "chronic anterior poliomyelitis." His case makes the diagnosis of syphilitic spinal muscular atrophy more than a merely tentative one.

S. A. K. WILSON.

THE OCCURRENCE OF INFANTILE PARALYSIS IN MASSACHUSETTS IN 1908.

(527) **THE OCCURRENCE OF INFANTILE PARALYSIS IN MASSACHUSETTS IN 1908.** (Second Paper.) R. W. LOVETT, *Boston Med. and Surg. Journ.*, July 22, 1909, p. 112.

AN EPIDEMIC OF INFANTILE PARALYSIS IN WESTERN MASSACHUSETTS IN 1908.

(528) H. C. EMERSON, *ibid.*, p. 115.

THESE papers both deal mainly with the etiology of this disease. The chief points elicited are as follows:—The distribution of cases was unlike that of 1907, localities affected then largely escaping. On the other hand, cerebro-spinal meningitis in the same two years had an almost identical distribution. It is an infectious disease, but, at the most, only mildly contagious. The harmful agent appears to enter by the digestive tract in most instances, but until the organism is known, it is impossible to say whether the infection is carried directly to the patient or by means of food.

J. H. HARVEY PIRIE.

ACUTE TYPHOID MYELITIS. (La myélite typhique aiguë.)

(529) S. ATANASSIÉVITCH, *Thèses de Paris*, 1908-09, No. 331.

THE term acute myelitis comprises all degrees of reaction of the spinal cord in typhoid fever, varying clinically from a form characterised by exaggeration of the tendon reflexes only to an ascending myelitis which is rapidly fatal. Though death is the usual termination of ascending myelitis, recovery sometimes takes place (*cf. Review*, 1906, p. 291). Recovery may be complete or attended by sequelæ, such as muscular atrophy or disseminated sclerosis. It is possible that slight lesions of the cord in typhoid fever may explain the rôle of this infection in the development of syringomyelia, Friedreich's disease, and hereditary cerebellar ataxia. As these sequels may be observed even after abortive myelitis, the prognosis should be guarded even in the mildest case.

The author has collected fifteen cases from literature, including that recorded by Voisin and Milhit. J. D. ROLLESTON.

ABORTIVE MYELITIS IN TYPHOID FEVER. (Myélite fruste (530) au cours de la fièvre typhoïde.) VOISIN and MILHIT, *Progrès méd.*, 1909, p. 317.

A BOY, aged 10 years, was admitted to hospital on the twelfth day of a mild attack of typhoid fever. There were no ocular troubles, nuchal rigidity, nor other symptoms suggestive of meningitis, but the lower limbs were markedly stiff, and were the seat of violent pains which occurred in crises. The attacks were usually spontaneous, but could also be provoked by certain movements, such as the examination for Kernig's sign. Pressure on the nerve trunks and muscles did not cause any pain. The knee and ankle jerks were exaggerated, and ankle clonus was present on both sides. The plantar reflexes were flexor. There were no sensory troubles. The sphincters, upper limbs, and face were not affected. The cerebro-spinal fluid was quite normal. On the day following lumbar puncture the pains were considerably less. Within ten days of admission the temperature became normal, and a fortnight later the stiffness in the legs had disappeared. When the boy was discharged from hospital, after six weeks' detention, his condition was normal, except that the leg muscles showed an exaggeration of faradic contractility. J. D. ROLLESTON.

REPORT OF A CASE OF SYRINGOMYELIA. BOOTH, *Journ. Nerv.* (531) *and Ment. Dis.*, Sept. 1909, p. 534.

BOOTH here relates a case of syringomyelia that has been under his observation for twenty-three years. During this time there has been but little advance in the progress of the malady. The symptoms are typical. ERNEST JONES.

A CASE OF NASAL TUBERCULOSIS TERMINATING IN (532) TUBERCULOUS MENINGITIS. A. J. HUEY, *N.Y. Med. Journ.*, Aug. 7, 1909.

THE patient, Mrs M., æt. 39, was sent to the author suffering from furuncles in the external auditory canal. During examination the left nasal chamber was found to be completely filled by a mass of very friable vascular tissue. A history was elicited of increasing difficulty in nasal breathing for the last four years, and profuse purulent discharge from the left side of the nose. A portion of the tumour was removed, and on microscopical examination it proved to be tuberculous. Three portions of the growth were then removed, and nasal breathing was thereby established. Three weeks later headaches, giddiness, and fever developed, followed by delirium, strabismus, ptosis, and coma. The patient died eight days after the onset of these symptoms. No post-mortem examination was made, but it is remarked that in the absence of any demonstrable lesion in the chest we must conclude that the case was one of primary nasal infection with direct extension to the meninges. The author finds one parallel case in the literature reported by Demme of Berne.

W. G. PORTER.

SECONDARY INFECTION IN TUBERCULOUS MENINGITIS.

(533) (**Méningite tuberculeuse et surinfection.**) G. PAISSEAU and L. TIXIER, *Gaz. des Hôp.*, July 8, 1909, p. 979.

THE authors describe a case of meningitis, proved to be tuberculous by the post-mortem findings and by the results of inoculation of a guinea-pig with the cerebro-spinal fluid, in which the microscopic and bacteriological examination of the cerebro-spinal fluid during life revealed the presence of a gram-negative diplococcus resembling the meningococcus, but distinguished from it by the readiness with which cultures and sub-cultures could be grown upon a score of media, including ordinary agar, by its failure to agglutinate with anti-meningococcic serum, and its failure to reduce sugars. A similar organism was found in the throat of the patient.

From a study of this and the cases already published the authors conclude that the influence of such a secondary infection upon the clinical evolution of tuberculous meningitis is extremely variable. In their own case the spinal symptoms disappeared at the end of twenty-four hours. They conclude, further, that no certain conclusions can be drawn from the cytological study of the cerebro-spinal fluid as regards the presence of a secondary infection, and that its bacteriological examination is the surest method of demonstrating such an occurrence. The findings at autopsy may give very uncertain results. The rarity or otherwise of such occurrences is as yet uncertain.

J. P. LOWSON.

THE DIAGNOSTIC VALUE OF LUMBAR PUNCTURE IN ACUTE (534) TUBERCULOUS MENINGITIS OF CHILDREN. SONDERN, *Arch. of Pediat.*, June 1909, p. 424.

THE author in conclusion tabulates the chief diagnostic and differential features of the lumbar fluid as follows :—

" Tuberculous Meningitis—

Pressure. Increased.

Appearance. Usually transparent and colourless, occasionally slight opalescence.

Density. Not much increased.

Albumin. From three-quarters to two per mille by weight.

Coagulation. Slight and frail.

Sediment. Slight.

Cytology. Average number of lymphocytes 86 per cent.

Bacteriology. Tubercle bacilli found in about 88 per cent.

In the presence of tubercle bacilli a relative polynuclear cell increase should stimulate the search for organisms of a second or mixed infection, particularly if the sediment is more abundant and coagulation pronounced.

In the absence of tubercle bacilli and other organisms, if relative lymphocyte increase and the other suspicious signs exist in an acute febrile case, the repeated search for bacilli is indicated, and the other causes for this combination should be kept in mind, namely, meningism of typhoid, pneumonia and infectious diseases."

A. DINGWALL FORDYCE.

EPIDEMIC CEREBRO-SPINAL MENINGITIS. (Contribution à (535) l'étude de la méningite cérébro-spinale épidémique.) T. L. MÉNARD, *Thèses de Paris*, 1908-09, No. 443, pp. 158.

A FULL account of the disease with special reference to the recent outbreak in Paris. Fourteen original cases are recorded, and a bibliography of recent literature is appended.

J. D. ROLLESTON.

CEREBRO-SPINAL MENINGITIS IN INFANTS. (La méningite (536) cérébro-spinale chez le nourisson.) F. COLIBERT, *Thèses de Paris*, 1908-09, No. 404.

EPIDEMIC cerebro-spinal meningitis is frequent in nurslings. In most cases it is easy to recognise, but it occasionally simulates other diseases. The following abnormal forms are described:— 1, A convulsive form, the only manifestation of the disease being subintrant convulsions; 2, a form simulating tetany; 3, a hyperæsthetic form; 4, a cachectic form, the symptoms of which are intense cachexia, fever, diarrhœa, and absolute anorexia. The thesis inspired by Lesage, of the Hôpital Hérold, contains the histories of eleven cases, seven of which are original.

J. D. ROLLESTON.

ACUTE CEREBRAL ATAXIA IN DIPHTHERIA. (Akute cerebrale Ataxie im Verlaufe einer Diphtherie.)

(537) MAX BRÜCKNER, *Berl. klin. Woch.*, 1909, p. 1563.

THE syndrome first described by Westphal, and later by Leyden under the name of acute central ataxia, is a very rare sequel of diphtheria. Its anatomical basis is a diffuse encephalo-myelitis, with special participation of the pons, cerebellum, and medulla. It must be distinguished from the acute peripheral ataxia or pseudo-tabes which is not infrequent after diphtheria, and is due to peripheral neuritis.

A previously healthy girl, aged 4 years, in the second week of a mild attack of faucial and laryngeal diphtheria suddenly developed a high degree of motor and static ataxia without paralysis or sensory impairment, and also some mental disturbance and affection of speech. The latter was characterised by slow and monotonous utterance and explosive articulation. Transitory paralysis of the bladder and rectum ensued. After some months almost complete recovery took place. The knee jerks were at first exaggerated, and at a later stage were still obtained.

Babinski's sign was present at first, but subsequently was replaced by a flexor response. J. D. ROLLESTON.

ORGANIC HEMIPLEGIA FOLLOWING PSYCHICAL TRAUMA IN A YOUNG WOMAN. (Ueber die organische Hemiplegie eines jungen Mädchens nach psychischem Trauma.)

(538) E. FRANK, *Berl. klin. Woch.*, 1909, p. 1154.

A PREVIOUSLY healthy woman, aged 26, received a severe shock from a rock falling through the window and upsetting a lamp which set her clothes on fire. The burns were only slight. The next few days she was excited and restless, and six days later left hemiplegia developed in the course of twenty-four hours. The organic character of the palsy was proved by the unilateral exaggeration of the tendon reflexes, positive Babinski and Oppenheim, diminution of the abdominal reflex, and affection of the facial nerve on the opposite side. There was no cardiac lesion, nor were there any signs of syphilis on the first examination, but closer scrutiny revealed cicatrices round the mouth which dated from an eruption at the age of five years, and a history of keratitis at the age of ten was obtained. The diagnosis of congenital syphilis was confirmed by a positive Wassermann's reaction. Frank thinks that the hemiplegia was due to hæmorrhage from a pontine vessel whose wall congenital syphilis had rendered unusually thin. Presumably a small tear was produced at first, so that some days passed before the paralysis was established. The supposition of co-existent hsyteria is unnecessary. J. D. Rolleston.

ENCEPHALITIS: TWO CASES WITH NECROPSY. Ingham, (539) *Journ. Nerv. and Ment. Dis.*, Sept. 1909, p. 538.

Ingham gives here a full account of two cases of cortical encephalitis, in neither of which was the diagnosis made during life. Ernest Jones.

INVERSION AND INTERLACING OF THE COLOUR FIELDS, (540) AN EARLY SYMPTOM OF BRAIN TUMOUR. Harvey Cushing and J. Bordley, *Journ. Nerv. and Ment. Dis.*, Sept. 1909, p. 549.

From careful perimetric examinations of about 200 cases of brain tumour the authors conclude that the above-mentioned symptom is a very common manifestation, and that the presence of it is of value in making an early diagnosis. Ernest Jones.

TUMOUR IN THE PITUITARY REGION, WITH UNUSUAL (541) DISTURBANCE OF VISION. (Geschwulst in der Hypophysisgegend mit ungewöhnlichen Sehstörungen.) Crzellitzer, *Berl. klin. Wchnschr.*, May 17, 1909, p. 921.

A clinical record of a case of tumour in the pituitary region, recognised by X-ray examination as well as by the following symptoms:—Headache, right corneal anæsthesia, paralysis of convergence, paralysis of the left pupil and weakness of the right facial nerve; on the right a paracentral, on the left a central scotoma, and on both sides a peripheral narrowing of the field of vision. The peculiar distribution of the visual disturbance can be explained by pressure on the papillo-macular bundle.

J. H. Harvey Pirie.

TUMOUR OF THE CRANIO-PHARYNGEAL CANAL. (Zur Kasuistik der Hypophysengangs-geschwülste.)

(542) FORMANEK, *Wien. klin. Wchnschr.*, April 29, 1909, S. 603.

THIS is a very interesting case of a girl of 18, who had always been infantile in bodily development and mentally, never menstruated, frequently suffered from headaches, and six months before being seen began to change in manner, getting more stuporose. She then began to lose weight steadily, and in the eight months preceding her death fell from 37·7 to 18·5 kg. Clinically there were never any localising tumour signs, but at the post-mortem there was found a cystic tumour at the base of the brain, pressing into the third ventricle. Histologically it turned out to be a squamous epithelioma, evidently of the cranio-pharyngeal canal. The pituitary itself was intact. There was marked atrophy of all the internal organs, and the genitalia were still infantile in their development. J. H. HARVEY PIRIE.

AN ANEURYSM OF THE LEFT ANTERIOR CEREBRAL ARTERY WITH RUPTURE, SIMULATING A BRAIN TUMOUR.

(543) BOOTH, *Journ. Nerv. and Ment. Dis.*, Sept. 1909, p. 528.

THE patient, a man of 30, suffered from severe headache, stiffness of the neck, slowness of speech, and convulsive seizures; optic neuritis and Kernig's sign were present. The diagnosis of tumour of the frontal lobe was made. A severe general convulsion was followed by coma and, in two hours, death. An account of the autopsy findings is given. ERNEST JONES.

THE THALAMIC SYNDROME.

(544) CORIAT, *Journ. Nerv. and Ment. Dis.*, Aug. 1909, p. 462.

CORIAT gives here an account of Dejerine's thalamic syndrome, of which about eighteen instances have been published, and then records four personal cases. None of them came to autopsy.

ERNEST JONES.

FURTHER CONTRIBUTIONS TO THE SYMPTOMATOLOGY OF DISEASES OF THE MOTOR NUCLEI. (Weitere Beiträge zur Symptomatologie der Erkrankungen der Motorischen Kernsaüle.)

(545) GOLDSTEIN and COHN, *Deutsche Zeitschr. f. Nervenheilk.*, 1909, Bd. 37, S. 21.

THESE observers record a series of cases of nuclear disease in the motor nuclei of the medulla and mid-brain.

Case 1.—The patient was a man of 26, in whom, during the course of eight years, there developed an increasing right ptosis, with slight weakness of the right external rectum and perhaps also of the right face. The absence of all other disturbances indicated an isolated lesion of the right third and sixth nuclei. The escape of the intermediate nucleus of the fourth is not in contradiction to clinical experience, the disease apparently having started in two isolated spots.

Case 2.—A girl of 24, some time after an attack of erysipelas in the head, gradually developed progressive weakness of the external ocular muscles, so that two years after the onset she had almost complete paralysis of the muscles supplied by the third nerve, with slight weakness of the fourth nerve and still slighter affection of the sixth nerve. In addition there was weakness of the muscle of the right side of the tongue, of the palate, and of the left lower facial muscles.

Case 3.—In a woman of 27, during the course of a febrile illness, weakness of the ocular and lip muscles developed, but the conditions did not progress. Four years later there was complete external ophthalmoplegia, with normal pupillary movements, weakness of both sides of the face, especially the left side, which showed distinct electrical changes. There was also slight diminution of electrical excitability on the sternomastoid and trapezius and weakness of the soft palate, weakness of the posterior muscles of the larynx and of the left side of the tongue. The affection therefore implicated the nuclei of the third, fourth, sixth, seventh, tenth, eleventh, and twelfth nerves, not symmetrically, but somewhat irregularly on the two sides. The case is apparently one of polio-encephalitis acuta, probably of infective nature.

Case 4.—During an attack of influenza, accompanied by a right-sided otitis media, in a man of 40, there appeared an atrophic right-sided paralysis of the facial, recurrent laryngeal and spinal accessory nerves, with slighter weakness of the right hypoglossa and a doubtful affection of the right auditory nerves. After a short time improvement set in, except as regards the ear, and three and a half years later all that remained was slight weakness of the face and of the trapezius.

Case 5.—A man of 39 developed indistinctness of articulation, with atrophy of the left side of the tongue; later he became hoarse and developed paralysis of the left side of the larynx, with some weakness of the left trapezius. Under mercury and iodide the larynx and trapezius recovered, but the tongue atrophy remained.

Case 6.—A man of 30, with a syphilitic history ten years previously, developed gradual difficulty of swallowing, together with hoarseness, also diplopia, headache, and giddiness. There was paralysis of the right sixth nerve, also of the right half of the larynx and partly of the right patch, together with wasting of the upper part of the right trapezius and right sternomastoid, and atrophy of the right half of the tongue. Energetic treatment improved the ocular palsy: the rest of the symptoms remained unchanged. PURVES STEWART.

ABSCESS OF THE BRAIN IN ASSOCIATION WITH PULMONARY DISEASE.

(546) SCHORSTEIN, *Lancet*, Sept. 18, 1909, p. 843.

THIS is a record of 19 cases of brain abscess associated with pulmonary disease, collected by the late Dr Schorstein. Two cases were from the London Hospital, the only ones of the kind in over 10,000 autopsies in the last ten years; 17 from the Brompton Hospital in 3700 post-mortems in the last twenty-two years. Of the 19 cases, 14 were associated with bronchiectasis, 3 with empyema, 1 with abscess of the lung, and 1 with emphysema and bronchitis. Abscess of the brain is the second most common cause of death in bronchiectasis, being just second to bronchopneumonia. These cases are all recorded in full, and references are made to 50 other cases in addition to his own.

J. H. HARVEY PIRIE.

TUBERCULOSIS OF THE HYPOPHYSIS ASSOCIATED WITH DIABETES MELLITUS. (Tuberculose de l'hypophyse et diabète sucré.)

(547) LUCIEN and PARISOT, *Rev. Neurol.*, Aug. 15, 1909, p. 970.

A WOMAN of 65 presented the characteristic features of diabetes mellitus, viz., polyuria, polydipsia, polyphagia, and glycosuria. Post-mortem the hypophysis was found to weigh ·73 grams: its size was 1·5 × 1·1 × ·8 centimetres. Its posterior lobe was apparently normal microscopically: the glandular lobe was found to be studded with typical nodules and tubercles, with irregular zones of leucocytic infiltration and sclerosis: in the tubercles giant cells were easily recognisable. A considerable portion of the parenchyma, however, was normal. The condition could be described as one of miliary tuberculosis, without any caseation. The pancreas was normal to the naked eye and microscopically. The patient did not present any of the clinical signs of acromegaly. While the association of disease of the hypophysis and diabetes has frequently been noted, the authors do not care to hazard any explanation, considering it impossible to exclude the action of other glandular organs in the body. S. A. K. WILSON.

HUNTINGTON'S CHOREA. HATTIE, *Amer. Journ. of Insanity*, July (548) 1909, p. 123.

HATTIE here gives an interesting tree of a family of Huguenot extraction, which settled in Nova Scotia a century and a half ago. Thirty-three instances of the disease were known of.

ERNEST JONES.

HEREDITARY CHOREA (HUNTINGTON'S). STEVENSON and (549) PURDUM, *Amer. Journ. Insanity*, July 1909, p. 129.

A TYPICAL case is here described and a short account of the morbid anatomy features added. Most prominent here were the increase in glia tissue, the extensive degenerations in the cortical cells, and the degenerations in the antero-lateral columns of the cord.

ERNEST JONES.

DIAGNOSIS OF HYSTERIA. (Diagnostic de l'hystérie.) BABINSKI, (550) *Journ. des Prat.*, July 3, 1909, p. 422.

THE case of a young girl is described, who, after surgical treatment for hydarthrosis of the knee by means of a plaster apparatus, presented paralytic phenomena in the corresponding lower limb, with fixity of the knee joint and anæsthesia from the knee downwards. There was coldness of the foot, with œdema and exaggeration of the tendon reflexes with a tendency to spinal trepidation.

The recognition of phenomena which are pithiatic—*i.e.* curable by persuasion—is most frequently based on negative signs. Here ankylosis was first excluded. It remained to exclude neuritis from compression in the plaster apparatus, and for this the conservation of the tendon reflexes and the faradic contractility of the muscles sufficed. The diagnosis of hysteria was confirmed by the rapid cure which resulted from the method of suggestion with persuasion, aided by the application of a strong electric current and the forcible overcoming of the contracture.

In recent years the conception of hysteria has been singularly modified, and discussions now turn on points of detail. There are no demonstrative facts which show that hysteria can produce trophic or vasomotor disturbances. In the present case the coldness and œdema are sufficiently explained by the treatment in a plaster apparatus. Similarly, the exaggeration of the reflexes and the tendency to spinal trepidation are occurrences which not rarely follow on articular affection. Hysterical paralysis is frequently and hysterical anæsthesia almost invariably the result of suggestions from the medical attendant. In other cases auto-suggestion is the cause. Babinski insists on the frequency of association of hysteria with organic troubles for several years past. Such pithiatic phenomena grafted on organic symptoms aggravate the situation of the patient, and may lead to an erroneous prognosis.

J. P. LOWSON.

HYSTERICAL APHASIA. (**Sur l'aphasie hystérique.**) G. MARINESCO, (551) *Sem. méd.*, Juin 30, 1909, p. 301.

IN this article the author discusses the differentia of hysterical aphasia, and also the conditions which determine hysterical accidents in general in relation to a case which he has personally observed. After referring to recent discussions on the genesis of hysterical phenomena, the author sketches the history of his subject, giving short accounts, with references, of the principal cases reported from 1887 to 1909. These include two cases of hysterical mutism with agraphia, a case of agraphia, two cases of pure word-deafness, a case of motor aphasia with intermittent jargonaphasia and a degree of agraphia, a case of hysterical mutism followed by troubles of spoken speech, intermittent word-deafness and troubles of writing, a case of motor aphasia, a case of total aphasia, a case of motor aphasia with agraphia and alexia, and two cases of pure motor aphasia. The majority of these patients displayed other hysterical phenomena.

The author's case was that of a midwife aged 52 years and mother of a healthy child, who, although rather emotional, had no previous hysterical history, nor was there a history of hysteria in her family. In April of last year she was urgently summoned to see one of her clients, whom she found dead. After a few minutes, during which she manifested excitement with cries and tears, she experienced a violent præcordial pain and fell unconscious. On recovery she showed complete right hemiplegia and her speech was difficult to understand.

On examination three weeks later the aphasia corresponded to no known form of that trouble. In addition to proper aphasic phenomena, the accent articulation and intonation were all affected. The patient lingered over the vowels *a*, *o*, and *u* where they precede two consonants, and the vowel *i* was shortened, though not always. She could not pronounce certain consonants such as *l* and *r*, and finally her speech was rather singing in character, certain letters having in addition a special resonance. The aphasic symptoms, properly speaking, consisted in stoppages in speech, hesitation and searching for the necessary word, with some jargonaphasia from the omission of certain letters or syllables. She also used certain abbreviations, especially for proper nouns, as in the speech of children. Most of these troubles were increased after any emotion and varied in intensity during the day. There was in addition a right hemianæsthesia and hemiparesis without alteration in the reflexes. The recognised signs of organic trouble were entirely absent. The author holds that the gait is essentially different in hysterical and in organic hemiplegia. There was no agraphia, properly speaking. No cause other than the emotion could be discovered for the illness.

The patient refused hypnotism, and was cured completely in some days by suggestion and reasonable persuasion. There has been no relapse since. The character and evolution of the paralysis could not be explained on the hypothesis of organic disease. The troubles of language were distinguished from those of organic aphasia by their peculiarity and by their paradoxal and multiform character.

As regards the genesis of hysterical phenomena in general, the author supports the opinion of Babinski that imitation and suggestion play a much more considerable part than is generally supposed. Babinski believes that the rôle of emotion has been much exaggerated. Hysterical crises are frequently imitations, and are sometimes also voluntary conscious performances. Constriction of the throat or mental cloudiness may be produced by emotion alone, but these are to be considered as simple physiological reactions. Again, the earthquake at Messina produced no hysterical accidents, and numbers of patients present every form of emotional reaction without a trace of hysteria. Nevertheless mixed cases, where the disturbance arises partly from emotion and partly from suggestion, are found in traumatic hysteria. The author himself is inclined to regard hysterical attacks as special reactions of the nervous system of hysterics. From this point of view there occurs in hysteria what is found in epilepsy and catatonia, a pathological condition which manifests itself by reactions appropriate to the particular condition of the cerebral cortex. According to Babinski, phenomena due to emotion as contrasted with suggestion are distinguished by being beyond the control of the will: such are tachycardia, vaso-motor disturbances, erythema and the secretions of the sweat glands and the intestines.

It was impossible to determine imitation or suggestion in the present case. The author considers that it is difficult, if not impossible, to exclude the influence of emotion in the genesis of hysterical phenomena. J. P. LOWSON.

REMARKS ON A CASE OF COMPLETE AUTO-PSYCHIC (552) AMNESIA. ERNEST JONES, *Journ. Abnorm. Psychol.*, Aug. 1909, Vol. iv., p. 218.

THE patient came under observation with a complete loss of personal memories. The case was studied from a psycho-analytic point of view, and is here published to illustrate some of the psychological mechanisms described by Freud as determining the symptoms of hysteria. AUTHOR'S ABSTRACT.

REPORT OF A CASE OF DISSOCIATED PERSONALITY, (553) CHARACTERIZED BY THE PRESENCE OF SOMNAMBULISTIC STATES AND AMBULATORY AUTOMATISM.

C. D. FOX, *Journ. Abnorm. Psychol.*, Aug. 1909, Vol. iv., p. 201.

THE patient, a man aged 39, had for years suffered from short somnambulistic attacks, that always followed an attack of acute asthma with severe coughing. In addition he had a phobia of high places, and was subject to outbursts of irritability. His condition was alleviated by hypnotic suggestion. Several interesting examples of post-hypnotic suggestion are detailed. Unfortunately no analytic study of the case was undertaken.

ERNEST JONES.

ON THE FLOW OF SALIVA IN CASES OF PARALYSIS (554) AGITANS. (Sulla Scialorrea nella paralisi agitante.)

A. GRAMEGNA, *Riv. di Patol. nerv. e ment.*, April 1909.

THE author has investigated the phenomenon of dribbling of saliva in paralysis agitans. He found this symptom present in seven of the fourteen cases of paralysis agitans that he investigated. He considers that the mechanical explanation of the dribbling of saliva is insufficient, inasmuch as only five of the seven cases in whom this symptom was present showed tremor of the lips and chin, whilst in the other two there was no sign of tremor, and out of the total fourteen cases another four showed marked tremor of the lips and chin without the salivary syndrome. The author considers that there is a true hypersecretion of saliva in paralysis agitans, and he regards this hypersecretion as a result of a bulbar disturbance of an organic nature. F. GOLLA.

A CASE OF UNILATERAL OPTIC NEURITIS FROM INTRA- (555) CRANIAL TUMOUR.

Sir WM. R. GOWERS, *Lancet*, July 10, 1909.

THE patient was a woman aged 37, who had suffered from headache for two years, with failing vision in the left eye for twelve months. The pupils acted to light on both sides, but on the left the action was not sustained. Optic neuritis (5 D swelling) in right eye, none in the left, which presented evidence of a primary atrophy of the nerve. There was loss of smell on right side, and later on left side as well. There was a slight hemiparesis of the left side, with diminution of the superficial and increase of the deep reflexes on this side. The plantar reflex was flexor. A tumour in the front part of the base of the brain was diagnosed, and the condition of the eyes was explained by direct pressure on the left optic nerve. Operation was undertaken, but the patient died after the first stage had been performed. At the autopsy an oval tumour was found lying in the mid-line and growing from the dura mater over the crista galli. It had infiltrated the bone to some extent, but had simply compressed and excavated the orbital surfaces of both frontal lobes without infiltrating. It had destroyed both olfactory lobes. In nature it was an endothelioma. Its dimensions were 2⅝ in. from side to side, 2½ in. from before backwards, and 1⅝ in. in thickness. It lay on the optic nerves and compressed them, the left more than right, and had pushed the optic chiasma backwards.

In the left optic nerve a little in front of the chiasma was a compact fasciculus of degenerated nerve fibres. This lay in the outer part of the nerve, and there was no degeneration of the axial fibres.

Other cases of unilateral neuritis are quoted in the paper, one of which the author attributes to gout and the second to "a commencing insular inflammation" near the nerve head, brought on by inhalation of coal gas. He lays down the general rule that "when uniocular neuritis is met with and suggests a cerebral tumour by its aspect, there is generally reason to think that it may be the consequence of some general cause."

C. M. Hinds Howell.

A CLINICAL STUDY OF OPTIC NEURITIS IN ITS RELATIONSHIP TO INTRACRANIAL TUMOUR.

(556) Leslie Paton, *Brain*, cxxv., 1909.

The 200 cases on which this paper is based were all seen at the National Hospital for Paralysed and Epileptic, Queen Square. They include practically every case of cerebral tumour between the years 1900 and the early part of 1908, in which the diagnosis was confirmed by operation or by autopsy, and they include none but confirmed cases. Forty cases, or exactly 20 per cent., showed no optic neuritis up to the time of death or of operative cure. In 4 of those 40 cases, however, a primary or pressure atrophy of both nerves occurred, and in each case this was due to direct pressure of tumour on the chiasma. The great bulk of the cases which did not develop optic neuritis were either tumours of the pons or tumours developing deep in the white matter of the cerebral hemispheres.

A few cases of meningeal tumours where the brain substance was not invaded also did not develop optic neuritis. The severity of the neuritis varied to a considerable extent with the situation of the tumours.

(1) Precentral tumours are nearly always associated with neuritis fairly severe in character.

(2) Postcentral tumours are nearly always associated with neuritis, as a rule moderate, and often of very short duration.

(3) Temporo-sphenoidal tumours are always associated with neuritis of about the same degree of severity as in frontal tumours.

(4) Of subcortical tumours about one half develop neuritis—as a rule, moderate in degree—and, as in the case of parietal tumours, frequently of short duration.

(5) Optic thalamus and mid-brain tumours are almost invariably associated with optic neuritis of very great severity.

(6) Cerebellar tumours are constantly accompanied by neuritis of a grave character.

(7) Extra-cerebellar tumours, as a rule, develop neuritis of a grave character.

(8) Of pontine tumours, about one half only develop optic neuritis, and then only when neighbouring parts of the brain, especially the cerebellum, have become involved. The neuritis when it does develop is usually very severe.

(9) Ventricular tumours develop a moderate neuritis.

In discussing the relationship of the amount of neuritis to the side of the tumour, the writer points out that in 30 of these cases the neuritis developed while the patient was under observation. In 13 of these the disc changes appeared practically simultaneously in the two eyes. In 11 they appeared first in the eye on the side away from the tumour, and in only 6 were the changes first seen in the eye of the same side as the tumour.

Of 102 cases in which no signs of atrophy or subsidence of neuritis were observable, in 54 the neuritis was practically the same in both eyes, in 48 the differences between the two discs were sufficiently marked to enable one to say definitely that one eye showed a greater neuritis than the other. In 25 of these it was the eye of the same side which showed the greater neuritis and in 23 it was the eye on the opposite side from the tumour. The writer concludes that until we can tell why it is that in such a large percentage of cases the disc of the opposite side should be more affected we are not justified in using a difference in the amount of neuritis as a sign of localising value.

He considers that the nature of the tumour plays a very small part in determining the onset of optic neuritis. In so far as the nature of the tumour determines its location, just so far does it seem to determine its relationship to the neuritis.

The evidence of these cases was all against any theory of an inflammation spreading by the meninges, but as a whole they seem to favour the hypothesis of a close relationship between a rise in intracranial tension and the occurrence of neuritis.

One point of very considerable practical importance appears from an examination of the vision of the cases operated on. Of 34 cases operated on while vision was still moderately good, 25 are still alive, while of the 13 with bad vision, only 3 are alive.

The writer suggests that the affection of vision in these cases is not of necessity the result of the papillary œdema; that it is quite possible that the visual loss and the papillary œdema are independent of one another. The visual loss may be a more profound result of the same cause which sets up the attacks of temporary amaurosis so frequently seen in cases of cerebral tumour. And as has been pointed out in a previous paper, such attacks may occur apart from any disc changes. He suggests that direct pressure of a distended III. ventricle on the chiasma may play a considerable part in the causation of the visual loss.

The main conclusions may be summarised :

(1) Tumours directly or indirectly exercising constant pressure on the chiasma, or on the optic nerves, may cause primary pressure atrophy without any preceding œdema of the disc.

(2) The great majority of tumours affecting the grey matter of the cortex cerebri have optic neuritis, the severity of which seems to vary inversely with the distance of the part affected from the chiasma.

(3) Tumours lying deep in the white matter of the cerebral hemispheres do not, as a rule, develop optic neuritis until they invade either the cortex or the basal ganglia. They are most likely to develop optic neuritis when they spread in the latter direction.

(4) Tumours affecting the optic thalamus, the mid-brain, the cerebellum and the ventricles are almost invariably associated with optic neuritis.

(5) Pontine tumours and some extra-cerebellar tumours which are closely allied to pontine tumours do not develop optic neuritis until neighbouring regions, especially the cerebellum, are invaded.

(6) A difference in the intensity of the neuritis in the two eyes is met with in about 50 per cent. of all cases. The neuritis in some cases is greater in the eye on the side of the tumour, and in some cases is greater in the opposite eye. When a difference exists it should not be regarded as of localizing value.

(7) The nature of a tumour does not in itself play any part in determining the onset of neuritis, except in so far as the nature of the tumour determines its location.

(8) A close relationship seems to exist between the occurrence of neuritis and the amount of intracranial tension, but there is as

yet nothing to justify us in saying that the relationship is one of cause and effect.

(9) Meningeal inflammation is rare in cerebral tumours, and when it does occur is, in the majority of cases, localized to the actual tumour area and plays no part in the causation of optic neuritis.

(10) There are reasons for thinking that the diminution of visual acuity and the œdema of the optic nerve-head are more or less independent of one another, and are not related to one another as cause and effect.

(11) The atrophy of the nerve in some cases at least is probably a simple pressure or descending atrophy starting from the chiasmal end of the nerve and exactly analogous to the primary atrophies that occur quite apart from any œdema of the disc.

(12) Age in itself has little or no relationship to the occurrence of neuritis. AUTHOR'S ABSTRACT.

ON THE CLINICAL IMPORTANCE OF BINASAL HEMIANOPSIA (557) AND ON THE STRUCTURE OF THE OPTIC CHIASMA IN MAN.

(Über die klinisch-diagnostische Bedeutung der binasalen Hemianopsie und über den Bau des Chiasma nervorum opticorum beim Menschen.) K. H. BOUMAN (of Amsterdam), *Monatsschr. f. Psych. u. Neur.*, May 1909.

THE author reports the case of a young man, 18 years of age, in whom after a slight skull injury there appeared definite symptoms of raised intracranial pressure. The most prominent symptom was binasal hemianopsia with retraction of both temporal visual fields, which terminated in complete blindness. At the autopsy the ventricles were dilated, and in the left lateral ventricle was a teleangiectatic sarcoma of the size of a walnut; there was considerable bulging forward of the lamina terminalis. The infundibulum had the appearance of being blown up.

The author discusses the anatomy of the chiasma and the relations of the crossed and the uncrossed bundles; only processes which affect the posterior and upper half of the chiasma can produce binasal hemianopsia. In the author's case this region was obviously the seat of great pressure, and thus the uncrossed bundles had been earlier affected than the crossed bundles. This form of hemianopsia is probably much more common than is usually believed, but is frequently not demonstrable owing to the presence of coma, or to the fact that many of the patients are children who are not available for perimetric examination.

According to the author a marked accumulation of fluid in the third ventricle and in the infundibulum gives rise to the following

clinical symptoms :—(*a*) General cerebral symptoms (headache, vertigo, etc.); (*b*) neuritic (later, atrophic) changes in the papilla; (*c*) binasal hemianopsia with retraction of the temporal visual fields.
C. MACFIE CAMPBELL

PSYCHIATRY.

THE CLINICAL VALUE OF CONSCIOUSNESS IN DISEASE.
(558) T. CLAYE SHAW, *Journ. Ment. Sc.*, July 1909, p. 401.

IN this paper the author draws attention to the difficulty which exists in deciding whether certain actions which may appear to be performed by patients with some definite purpose may not be the outcome of a state of unconsciousness and occur without his having any actual knowledge that they have taken place. In dream states and in insanity the emotional side of an idea may be wanting, and this must have a great effect on both memory and consciousness. This is often the case in persons who have unsuccessfully attempted suicide or homicide and who have no recollection of their action afterwards, even when their attempts have exhibited the appearance of calm deliberation. There are as many forms of consciousness as there are different mental states, and it is wrong to speak of dual conscience; in morbid processes the method of action from sensation, through emotion and idea to accomplishment, is the same as in health. It is therefore a very important matter not to attribute responsibility where it may not exist. The responsibilities of health and disease are two very different matters, and some morbid mental processes work out in a manner closely resembling those we declare to be forms of sanity.
RAE GIBSON.

OBSERVATIONS ON THE BLOOD-PRESSURE AND VASCULAR DISEASE IN THE FEMALE INSANE.
(559) JOHN TURNER, *Journ. Ment. Sc.*, July 1909, p. 418.

THESE observations do not agree with those of Craig and other writers. Turner finds that there is no definite relation between pressure and exalted or depressed states. He suggests that the interference with the pressure is due to some nervous condition at work. Advancing age is the only condition which can be shown by the sphygmomanometer to have a constant relation to changes in pressure. Pressure observations alone are a very rough means of determining structural alterations of the circulation. There is generally a relation between the height of pressure and slow rate of coagulation. The high percentage of microscopic changes in the small blood vessels shows that vascular lesions are very important in the histogenesis of insanity. Heightened blood-pressure may be due to the entrance of kidney substance into the circulation. The author concludes by observing that owing to the frequency with which vascular changes are met with in the insane, a blood-pressure record along with a histological examination of the blood vessels fully justifies the time it occupies.

RAE GIBSON.

SYPHILOMANIA AND SYPHILOPHOBIA. (Syphilomanie et (560) syphilophobie.) A. MORVAN, *Thèses de Paris*, 1908-09, No. 421.

MORVAN adopts the definition of these terms given by Audry (*v. Review*, 1908, p. 442), and records six interesting cases observed in Bodin's clinic at Rennes. Two patients—one a medical student—were haunted with the obsession of commencing tabes, general paralysis or cerebro-spinal lues, and were constantly examining their knee-jerks and pupils. The disastrous effect of altruistic syphilophobia is illustrated by the case of a man who treated his wife when she was suffering from typhoid periostitis with mercurial inunction. Symptoms of mercury poisoning arose, and death took place in twenty-five days. In another case syphilophobia developed from seeing Brieux's play *Les Avariés*. Other works of fiction, the perusal of which may give rise to these psychoses in the predisposed, figure in the bibliography. J. D. ROLLESTON.

A CLINICAL COMMUNICATION ON ARTERIOSCLEROTIC (561) MENTAL DISORDERS. (Zur Klinik der arteriosklerotischen Seelenstörungen.) L. W. WEBER, *Monatsschr. f. Psych. u. Neur.*, Bd. 23, Ergänzungsheft, S. 175.

THE author reports six cases in which he made the diagnosis of arteriosclerotic mental disorder; in one case there was a post-mortem examination. The disorders began in the fifth decade of life or earlier, with ideas of greatness, elation and motor unrest, accompanied by some organic symptoms, the most important of which were the pupillary symptoms. The diagnosis of general paralysis was excluded on the following grounds:—(1) The expansive ideas were more in keeping with the patient's normal personality, occupation and social position; the patient attempted to give some logical basis for them, was not easily influenced by suggestion. (2) Even during periods of marked excitement the patient remained clear. (3) The intellect was comparatively intact for a long time, the memory and retention were not always affected, insight into the patient's own condition was frequently more or less preserved.

(4) The ethical defect consisted in a pronounced egoism, a want of the restraining inhibitions which go with culture. (5) The organic symptoms were not so constant as in general paralysis ; there was no articulatory speech defect ; the pupillary symptoms affected the accommodative as well as the light reaction. (6) The duration was longer than in general paralysis. (7) The course was more remittent. (8) The psychoses developed in patients with a congenitally defective cardio-vascular system. (9) Exogenous causes were present in several cases. (10) The anatomical basis in the one case examined was a diffuse affection of numerous small blood-vessels with secondary degeneration of the nervous tissue and perivascular gliosis.

C. Macfie Campbell.

THE MENTAL INVENTORY OF SO-CALLED DEMENTS. (Der
(562) **geistige Besitzstand von sogenannten Dementen.)** R. Redepenning (of Göttingen), *Monatsschr. f. Psych. u. Neur.*, Bd. 23, Ergänzungsheft, S. 139.

The author has used Ziehen's schema for the examination of the intellectual level in the case of eight demented patients ; he arrives at no general conclusions, and the communication is of use chiefly as an example of the method employed.

C. Macfie Campbell.

CONTRIBUTION TO THE SUBJECT OF JUVENILE DEMENTIA
(563) **BASED ON THE EXAMINATION OF THE CHILDREN IN THE GÖTTINGEN SPECIAL SCHOOL. (Beitrag zur Lehre über den jugendlichen Schwachsinn an der Hand von Untersuchungen an Kinder der Göttinger Hülfsschule.)** K. Vix (of Göttingen), *Monatsschr. f. Psych. u. Neur.*, Bd. 23, Ergänzungsheft, S. 158.

Fifty-one pupils from the school for defective children were examined at the policlinic with as much detail as the circumstances allowed ; the age of the children ranged from 8 to 15. The author's conclusions follow :—(1) There is a striking poverty of ideas, especially of abstract concepts. (2) Ideas of colour are specially defective. (3) The inability to form judgments and draw conclusions is especially prominent. (4) This defect in judgment shows itself most markedly in the uncritical repetition of what is learned by heart. (5) The most prominent features in the equipment of these defectives are poor grasp, defective memory and power of attention. (6) The affective disorders of these children are less prominent than the intellectual disorders. (7) Frequently defective intelligence and signs of physical degeneracy go hand in hand.

C. Macfie Campbell.

A CASE OF SCHIZOPHRENIA (DEMENTIA PRÆCOX). A. A. (564) BRILL, *Amer. Journ. of Insanity*, July 1909, Vol. lxvi., p. 53.

THIS is the second case, studied by Freud's psycho-analytic method, to be published in English, the first having been recorded last December by the same author (see *Rev. of Neurol. and Psychiat.*, Feb. 1909, p. 135). Like the former case, it was studied in Bleuler's clinic in Zurich. The interesting study does not lend itself to a brief abstract, but should be read in the original by those who wish to learn something of the subject.

ERNEST JONES.

A STUDY OF ERRORS IN THE DIAGNOSIS OF GENERAL (565) PARESIS. SOUTHARD, *Journ. Nerv. and Ment. Dis.*, Sept. 1909, p. 545.

IN Danvers Insane Hospital, between 1904 and 1908, the diagnosis of general paralysis was made in sixty-one cases; in forty-one of these it was regarded as being absolutely certain. Of the forty-one, thirty-five were confirmed at autopsy and six were shown to have been incorrectly diagnosed. ERNEST JONES.

THE URGENT NECESSITY OF HELPING MENTAL CONVAL- (566) ESCENTS. ROBERT JONES, *Journ. Ment. Sc.*, July 1909, p. 410.

THIS paper was read at the annual meeting of the After-Care Association last February. It is an appeal for aid for a Society which has already done a vast amount of good, and but for want of money would do far more in future. Institutions such as hospitals and prisons make arrangements to aid their discharged inmates. Dr Jones points out that After-Care Associations exist in several other countries for the help of mental patients. He enlarges on their successful work, and points out the necessity of increasing the sphere of usefulness of the Society in our own country by additional support. RAE GIBSON.

REMARKS ON HOSPITAL (*i.e.* ASYLUM) TREATMENT OF THE (567) ACUTELY INSANE. MERVYN A. ARCHDALE, *Journ. Ment. Sc.*, July 1909, p. 453.

THE paper commences with an account of the most common causes of acute insanity, which the author has classified into several groups. He then describes the best methods of treating the various conditions, advocating strongly complete rest in bed, nourishing simple diet, and fresh air. He gives in detail a plan on which to erect a suitable veranda, where this treatment could best be carried out, with some suggestions as to the methods to adopt in the case of patients requiring observation and isolation. Special methods of treatment, such as suggestion and hypnotism, are referred to in relation to those cases in which they are of most use. The paper contains some practical suggestions as to methods for the restoration to normal of disturbed metabolism, and some useful hints for the regulation of the diet and bowels of the patients. In conclusion, he gives us some rules to follow in the administration of hypnotics and sedatives and in the exercising of patients. RAE GIBSON.

TUBERCULOSIS IN THE LONDON COUNTY ASYLUMS. F. W. (568) MOTT, *Arch. of Neurol. and Psychiat.*, Vol. iv., 1909.

IN a very instructive and exhaustive paper Mott refers first of all to the system of notification carried out in the London County Asylums, and to the monthly reports giving information as to the age on admission, sex, date of admission, ward, mental disease, date of discovery of the tuberculosis, progress of case and ultimate result —if death, the post-mortem findings. The writer states that among the living patients in the asylums under consideration, 20 per 1000 are tuberculous, but the incidence of reported cases varies from 10·6 to 40·3 per 1000. Young people suffering from melancholia, dementia præcox, and imbecility are most liable to the disease.

It has been found that a large proportion of general paralytics die with recent active tubercular disease which is not diagnosed during life. This is especially true in regard to female general paralytics.

Active phthisis was found in 14·8 per cent. of the autopsies made during the past five years.

The mortality from phthisis among the insane is highest at an earlier age period than among the sane, and the death-rate between the ages of fifteen and thirty-five is about fifteen times that of the sane population for the same age period.

It is of interest to note that 51·6 per cent. of all the patients dying exhibited either latent or active tuberculosis, or both. It was inferred from the post-mortem examinations that not more than 10 per cent. of the cases with active phthisis at the autopsy could have acquired the disease in the asylum.

The prophylactic measures suggested are: (1) earlier and more frequent diagnosis of active phthisis with a view to isolation; (2) the adoption of the verandah system of open-air treatment; and (3) the encouragement of the use of proper receptacles for expectoration. R. DODS BROWN.

TREATMENT.

TREATMENT OF ACUTE SYPHILITIC MENINGITIS. (Contribution à l'étude du traitement des méningites aiguës syphilitiques.) A. MOIGNET, *Thèses de Paris*, 1908-09, No. 326.

(569)

IN acute syphilitic meningitis, with a tendency to localisation, excellent results may be obtained by the intragluteal injection of calomel. On the other hand, in diffuse meningeal inflammation, the injection of soluble salts is advisable, as in Boidin and Weill's cases (*v. Review*, 1907, p. 901). Owing to the impermeability of the meninges to drugs administered by the mouth or skin, an intraspinal injection of the specific remedy may be sometimes advisable, especially as the causal organism has been found within the cerebro-spinal fluid (*v. Review*, 1908, p. 290, and 1909, p. 427).

The pain of meningitis, which is mainly due to hypertension, can be relieved by lumbar puncture.

The thesis contains fourteen illustrative cases collected from recent literature. J. D. ROLLESTON.

THE SERUM TREATMENT OF EPIDEMIC CEREBRO-SPINAL MENINGITIS. (Serumtherapie bei epidemischer Genickstarre.) BRUNO LEICK, *Münch. Med. Woch.*, 1909, p. 1275.

(570)

THE mortality at the hospital at Witten in Westphalia among sixty-two cases in which serum was not used, except in three to whom it was given subcutaneously, was 67·7 per cent. Of thirty-four cases at the same hospital injected with the Kolle-Wassermann serum, eleven died—a mortality of 32·4 per cent. After the deduction of five cases who were moribund on admission, his figure falls to 20·7 per cent. In most cases recovery was complete; in two cases deafness, in one right hemiplegia, and in one mental impairment were noted as sequelæ. Leick concludes that the Kolle-Wassermann serum is of great value in the treatment of epidemic cerebro-spinal meningitis. J. D. ROLLESTON.

THE TREATMENT OF CEREBRO-SPINAL MENINGITIS IN CHILDREN WITH FLEXNER AND JOBLIN'S ANTI-SERUM. N. PERCY MARSH and OWEN T. WILLIAMS, *Liverpool Med.-Chir. Journ.*, July 1909.

(571)

THE authors introduce their subject by referring to the importance of the examination of the cerebro-spinal fluid obtained by lumbar puncture in the diagnosis of tuberculous meningitis from the other types of the disease, and pointed out that in their last fourteen cases they have succeeded in recovering the tubercle bacillus from the cerebro-spinal fluid in every instance. To emphasise this point four cases of tuberculous meningitis with secondary meningococcic infection are described in detail. After referring to the mortality (70-80 per cent.) in cerebro-spinal meningitis previous to the use of this serum, they briefly refer to Flexner's tables, which show that in 523 cases in which the serum had been used 368 recovered, the mortality being reduced to 29·6 per cent. Especial reference is made to the mortality in children under two, which shows the comparatively high mortality of 42·4 per cent. in 59 cases; but it is pointed out that in these the high mortality is entirely amongst those cases which were not treated until after the seventh day of the disease, showing the importance of early diagnosis and treatment. After describing the serum, and its effect both on the organisms and the cytology of the fluid, it is pointed out that, being bactericidal and only slightly anti-toxic, it has to be injected directly into the spinous canal, and the method of doing so is described. The salient features of fourteen cases of cerebro-spinal meningitis which were treated with the serum are considered, which varied in age from three months to four years, and of which seven recovered. Three of the cases which recovered, which were obtained in the first few days of illness, are described in detail. The amount of serum in each case varied from 10 c.c. up to 130 c.c., and the number of injections from one to five. In infants small doses of 10 to 15 c.c. are advocated, whereas in older children the suggestions of Dunn, of Boston, of giving 30 c.c. on four successive days were employed, the results upon the symptoms and the fluid guiding future procedure. In conclusion, the authors consider that the use of this serum in early cases promised extremely favourable results, and even in later cases it undoubtedly favoured the prognosis. AUTHORS' ABSTRACT.

THE IMMEDIATE TREATMENT OF INFANTILE PARALYSIS (572) OF UPPER LIMB. W. MACKENZIE, *Intercol. Med. Journ.*, May 20, 1909, p. 250.

THE principle adopted by the writer in his treatment of a series of eighteen of these cases is rather a revolutionary one, but the results seem to warrant its use. Briefly it is this:—Immobilise the affected muscles immediately, and keep them so for three months or more. To do this effectively in the upper limb he has devised a special splint (see the same *Journal*, vol. xii., p. 327, and vol. xiii., p. 424) for deltoid and biceps paralysis; this will keep the limb at a right angle, and to coax it back into action the angle of the splint is gradually altered *pari passu* with the amount of recovery present. The recovery should be first examined for with the child in the recumbent position, and even then only let the muscles do such work as can be done without effort. Treatment is also best carried out with complete recumbency, secured for convenience by means of a double Thomas' splint. The muscles were found well nourished at the end of the three months' immobilisation. To be successful, he insists on the treatment being carried out in its entirety, and there are so many chances for leakage—changing the splints, massaging, testing for recovery, and the interference of friends. J. H. Harvey Pirie.

EXPERIENCES IN THE TREATMENT OF DISTAL PARALYSES (573) BY NERVE ANASTOMOSES. A. H. Tubby, *Lancet*, Sept. 4, p. 706.

This is a record of eight cases of various sorts, all having been under observation for not less than three years since the operation. Two cases were of traumatic origin, and one recovered after complete severance of the nerve and one is showing steady progress towards recovery. Of the six cases due to anterior poliomyelitis, in four there is distinct evidence of a more than partial recovery of the muscles, but in one of these cases improvement has ceased for a year. In two others no clinical signs of regeneration are apparent, even after four years. In one of the latter operative exploration showed, however, that the external popliteal nerve was being regenerated centrifugally.

J. H. Harvey Pirie.

THE SURGICAL TREATMENT OF ATHETOSIS AND SPASTICITIES BY MUSCLE GROUP ISOLATION. (574) Schwab and Allison, *Journ. Nerv. and Ment. Dis.*, Aug. 1909, p. 449.

Being dissatisfied with the results of nerve or tendon transplantations in these conditions, the authors have devised a new procedure, which consists in isolating the nerve that innervates the more powerful group of muscles and temporarily paralysing it by means of an injection of alcohol. Physiological exercises destined to increase the activity of the antagonist muscles are then instituted. The authors relate three cases (of spastic hemiplegia, paraplegia, and diplegia respectively) in which they obtained beneficial results.

Ernest Jones.

Reviews

SYMPTOMS AND THEIR INTERPRETATION. JAMES MACKENZIE, M.D., M.R.C.P. London: Shaw & Sons, 1909, pp. 297. 7s. 6d.

THE title of this work is rather misleading, because the author has, as he states in his preface, largely ignored the symptoms arising from changes in function or in the structure as revealed by physical signs. He limits himself almost entirely to an explanation of the reflex phenomena in visceral disease, such as pain, "the only sensory reflex in visceral disease," increased sensibility of the external body wall, and the viscero-motor reflex, viz., that contraction of voluntary muscles in the external body wall in response to a stimulus arising from a viscus. After setting forth the principles he goes on to the application of the doctrine to diseases of certain viscera, more particularly the heart and stomach. Even if one does not agree entirely with his absolute denial of pain arising from a viscus being felt in that organ, one must admit that a careful study of the reflex phenomena is of much more value for diagnostic purposes. The methods are practical and of the simplest, for the symptoms lie ready to hand and available not only for the consultant physician and surgeon, but for the most general of general practitioners. The latter, indeed, can best make use of the facts and methods referred to by Dr Mackenzie, for they see the cases in their early stages when the symptoms arising from reflex stimulation of the nervous system will be of much more value in diagnosis than the laboratory methods, and no practitioner should be without a copy of the work.

J. H. HARVEY PIRIE.

OTITIC CEREBELLAR ABSCESS. HEINRICH NEUMANN, Privat-Docent, University of Vienna. Translated by RICHARD LAKE, F.R.C.S.Eng. London: H. K. Lewis, 136 Gower Street. 1909. 4s.

ALTHOUGH Neumann's original Monograph has been before the profession for some little time, an English edition will be welcomed by all who are interested in the subject, and we are indebted to Mr Lake for his excellent translation. With the publication of MacEwen's classic work upon the "Pyogenic Diseases of the Brain and its Membranes," fresh impetus was given to the study of this branch of surgery. The diagnosis of cerebellar abscess of aural origin presents many difficulties, and it is only by a close study of many carefully observed cases that new light is to be gained. Neumann bases his remarks upon the cases of temporo-sphenoidal and cerebellar abscess which have been published since 1900, together with those observed in Politzer's Clinic during the same period. The statistics embrace 336 cases of temporo-sphenoidal and 196 of cerebellar abscess. The material is therefore very considerable.

Certain facts already demonstrated by other writers upon the subject are again drawn attention to by Neumann. Thus, he shows that the majority of such intracranial complications occur between the tenth and thirtieth year of life : the larger proportion are found in the male sex, while a greater preponderance of brain abscesses is associated with middle-ear suppuration upon the left side. The majority of abscesses are formed in connection with chronic middle-ear disease, as many, indeed, as 88 per cent. in Neumann's statistics.

One of the most interesting and, indeed, one of the most important points in connection with the development of cerebellar abscess rests upon a study of the pathway of infection, and the author devotes special attention to this. It is true that he has only a small number of cerebellar cases complicating acute middle-ear suppuration (12 per cent.). Nevertheless, he feels justified from his observations in making the statement that the labyrinth plays no rôle in their development, the cerebellar abscess in these circumstances being secondary either to a sinus thrombosis, or to an extradural abscess in the posterior cranial fossa. In chronic middle-ear suppuration, on the other hand, a very different picture is presented, as the majority of cases of cerebellar abscess are secondary to labyrinthine suppuration. This statement is based upon an examination of 132 cases of abscess in the cerebellum. In a review of this kind, it is unnecessary to follow the writer further on this point, but its significance both in connection with diagnosis and treatment is at once obvious. In some cases it may be necessary to consider the differential diagnosis between labyrinthine suppuration and cerebellar abscess: in others, again, the recognition of a cerebellar abscess complicating suppuration in the labyrinth is essential. At the present time, mainly through the admirable work of Báràny, important diagnostic information is being obtained from the functional examination of the vestibular portion of the labyrinth, and Neumann's observations upon this form not the least valuable part of his Monograph. Experience shows that labyrinthine cerebellar abscess and purulent disease of the labyrinth often manifest similar clinical phenomena, so that the decision as to whether a cerebellar abscess is associated with pus in the inner ear—a condition which may be demonstrated by the functional tests—often presents the greatest difficulties. In these cases the labyrinth is first opened and further operation postponed until the development of cerebellar symptoms becomes evident.

A further advance in our knowledge of suppurative intracranial disease is now obtained by a routine examination of the cerebro-spinal fluid. The differential diagnosis between cerebellar abscess and meningitis in the posterior cranial fossa is often very difficult in the initial stage, and assistance should be sought for by means of lumbar puncture. The author is careful to point out, however, that the negative result of such puncture by no means excludes the presence of diffuse purulent meningitis, while, on the other hand, there may be turbidity of the cerebro-spinal fluid with increase of the polynuclear leucocytes, without the presence of meningitis: if the brain abscess lie near the cortex, the leucocytes may travel to the surface and so cause turbidity of the fluid.

The statement is made that changes in the fundus oculi are common accompaniments of otitic endocranial complications. We are not prepared to support this: if choked disc or optic neuritis be present, it affords useful diagnostic information, but in a considerable number of cases no change is to be noted. The choked disc is certainly more common with cerebellar than with cerebral abscess.

We are somewhat astonished to read that the soft palate is paralysed if the facial nerve becomes involved at its point of entry into the internal auditory meatus. One must suppose that statements of this kind are the result of copying from old anatomical text-books, but it is a pity that they should creep into a work which otherwise contains so much recent research. Prognosis in cerebellar abscess is not good: the mortality is still invariably high, although an increased knowledge of pathogenesis and diagnosis will make the results of operation progressively more favourable, and an improvement in the percentage of cures must be anticipated in the future. In Politzer's Clinic only seven cures were obtained out of twenty-eight cases. After careful perusal of Neumann's book we are of the opinion that the surgeon will obtain undoubted assistance from it in dealing with this class of case. A. LOGAN TURNER.

BEITRAGE ZUR PATHOLOGIE DES STOFFWECHSELS BEI PSYCHOSEN. THEIL II.: DIE EPILEPSIE. MAX KAUFFMANN (Halle a. S.). Jena: Gustav Fischer, 1908. Pr. 6 M.

THE author presents the detailed results of his observations on the metabolism of five epileptics. In reviewing the work done by his predecessors he brings out the extraordinary divergence of opinion which exists as to the nature and significance of the disorders of metabolism in this disease. His own results have not led him to any general conclusions, and cannot be summed up in any brief formula.

The book represents a great deal of painstaking work, and must be welcomed as a further contribution to our knowledge of a most difficult subject. C. MACFIE CAMPBELL.

DIE SELBSTMÖRDER. Dr ANTON BROSCH. Leipzig et Wien: Franz Deuticke. 1909. Pp. 192.

DR BROSCH has made a very thorough analysis of over 300 cases of suicide in the Austrian army in this work. The suicide rate in the Austrian army is enormous, more than twice that of any other army, and this figure is all the more striking since the general rate for the country is considerably less than, for instance, in France or Germany. The author has studied these cases from many points of view, and come to the conclusion from the post-mortem findings that the bodily condition is in a great many cases responsible for the suicide. But this will not explain the heavier incidence than among the civil population. It does not appear to be severity of discipline, which is considerably lighter than in Germany. Dr Brosch's view appears to be that it is largely caused by the heterogeneity of the army, and at all events the rate is much greater in those regiments where the men are of many different races, tongues and creeds than in those that are more homogeneous. J. H. HARVEY PIRIE.

CONSIDERATIONS SUR LA PARALYSIE GÉNÉRALE INFANTILE. M. BRISARD. Toulouse: Ch. Dirion. 1909. Pp. 88.

No new cases or observations have been made in this thesis. The writer's main conclusions are:—

(1) General paralysis may develop at any age, its frequency increasing as years go on.
(2) The juvenile form is characterised by—
  (a) Predominance of the demential form, rarity of megalomania, and still greater rarity of ideas of persecution.
  (b) Frequency of epileptiform seizures.
  (c) Pupillary reaction often simply sluggish.
  (d) Patellar reflexes rarely exaggerated.
  (e) Duration of the disease relatively long.
(3) The cause is, above all, hereditary syphilis; the way may be paved for it by other hereditary stigmata.
(4) The lesions are similar to those of the adult, but with much greater frequence of associated cord lesions.

J. H. HARVEY PIRIE.

"THE MANIAC." A REALISTIC STUDY OF MADNESS FROM THE MANIAC'S POINT OF VIEW. London: Rebman Limited, 1909. Price 6s.

THIS remarkable book should be read by every one interested in psychiatry, and we say this although we are aware that many will doubt the ability of a patient to record thus faithfully, as far as is possible with a memory distorted and damaged by illness, the incidents of an attack of acute mania of six weeks' duration. The sufferer and authoress is a lady who, prior to her breakdown, to which overwork, association with a lady of spiritualistic tendencies, and a comparatively lonely existence in a London lodging, were contributory factors, was following the vocation of a journalist. The record is of especial interest as regards the development of acute mania, as showing how very persistent and persecutory are auditory hallucinations in particular; the amount of memory retained and its nature; the prominence of delusions of a sexual character; the amount of consciousness lost during the attack; (the patient in this case was not only unable to recognise her brother, who came daily to see her, but was utterly unconscious of his presence and also of the presence of other relatives and friends) and the gradual recovery. In general character the book partakes too much of the nature of a sensational piece of fiction, and will, we fear, fall into the hands of neurotic men and women, with results which may be disastrous. It is not a book for the general public but one for the trained mental physician. Superintendents of mental hospitals would do well to ponder over the note on page 188. Simplicity of surroundings for acute mental cases is, however, being generally recognised as of supreme importance in the treatment of these.

C. ROBERTSON MILNE.

ON A CASE OF SIMULATED INSANITY. A STUDY IN CRIMINAL PSYCHOLOGY. (Sur un cas de simulation de la folie. Essai de psychologie criminelle.) C. CHARPENTIER (of Parie). Amsterdam: Imprimerie J. H. De Bussy. Pp. 26.

THIS communication was read at the International Congress of Psychiatry, Neurology, etc., held at Amsterdam in September 1907. It consists of the history of a young woman who was arrested for theft, and was found to have been already convicted several times. The history which she gave, and which was confirmed by her husband, led to a medical examination. The expert reported as follows: (1) L. K. suffers from grave hysteria with morbid impulsions. (2) The theft was committed under the influence of a kleptomaniacal impulsion; she should therefore not be considered responsible for the act. (3) The accused should be detained in an asylum to receive the necessary care and in the interest of public security.

The accused was accordingly admitted to an asylum; she presented an amnesia for the period of the theft, and was for a short time in a somewhat dreamy state. Physically there was noticed anæsthesia over the whole body, and loss of the corneal and pharyngeal reflexes. One month later examination disclosed some discrepancies in her statements and behaviour which threw doubt on the diagnosis, and the following facts came to light:—The so-called husband was a mere accomplice; she herself was a professional thief: with three previous convictions and certain condemnation facing her again, she had obtained, on the advice of the lawyer, an expert examination; an accomplice had furnished her with some medical literature on impulsions and obsessions which she utilized very skilfully. Such were the steps which had led to her commitment to an asylum for the insane.

A further analysis of her history showed that she had adopted the life of a professional thief, not owing to any known psychopathic constitution, but for comparatively simple reasons. There was no warrant for explaining her simulation on any psychopathic basis, and the author recommends caution in assuming that it is only on such a basis that simulation occurs. C. MACFIE CAMPBELL.

Report of Congress

SIXTH INTERNATIONAL CONGRESS OF PSYCHOLOGY

THE Sixth International Congress of Psychology met at Geneva, August 3-7, under the presidency of Professor Flournoy. There were over 500 members present, but many were not professionally interested in psychology. The English contingent included Messrs Beattie, Bligh, Brown, Burt, Darwin, Hart, MacDougal. Ten subjects had been chosen for discussion.

1. *The Subconscious.*—Max Dessoir (Berlin) developed the analogy of the field of consciousness with the field of vision, and discussed the circumstances under which a content in the periphery of the field can become dissociated from the main consciousness and lead an independent existence. Pierre Janet (Paris) would confine the term subconscious to denote certain precise and tangible phenomena observable only in hysteria (unconscious fixed ideas). Morton Prince (Boston, U.S.A.) defined six senses in which the term is frequently employed. He would altogether discard it, and substitute for it the expression "coconscious." This denotes various disaggregated mental processes

of which the subject is quite unaware, which manifest themselves in automatic writing, in hypnosis, and in different abnormal states, especially in hysteria. These processes may exhibit logical reasoning, calculation, memory, volition, etc.—in short, all the psychological qualities that we habitually attribute to an intelligence. Further, in cases of multiple personality they may maintain of themselves that they are clearly self-conscious and distinct from the main personality; we have therefore no more right to deny that they are intelligent mental processes than we have in the case of a normal mind. He would use the term "unconscious" to denote physiological brain dispositions by which are stored memories, and which are dormant until they are stimulated and give rise to psychical processes. Most of the mental functioning in the normal, though not all, depends on the latter group.

2. *Feelings.*—Külpe (Würzburg) and Sollier (Paris) read papers on this subject. The former restricted the term to the elementary processes of "*lust*" and "*unlust*," and criticised the current definitions and criteria. He then described the varieties of feeling and discussed the methods by which they may be investigated.

3. *Tropisms.*—Papers were read on this subject by Jennings (Baltimore), Darwin (Cambridge), Loeb (Berkeley), and Bohn (Paris). A long discussion followed.

4. *Psychology of Religious Phenomena.*—Höffding (Copenhagen) and Leuba (Bryn Mawr) read papers, both maintaining the right to adopt an objective attitude towards the subject. The discussion that followed was animated, and indeed heated, so that at the final general meeting it was proposed to eliminate the subject from the next Congress. The meeting, however, decided that it should constitute one of the subjects for discussion at the next Congress.

5. *Psycho-pædagogic Classification of Backward Children.*—This also was a subject that aroused general interest. Papers were read by Decroly (Brussels), Ferrari (Bologna), Heller (Vienna), and Witmer (Philadelphia).

The other subjects were: (6) *Measurement of Attention*, Patrizi (Modena) and Ziehen (Berlin); (7) *Methodology of Pædagogic Psychology*, Ioteyko (Brussels); (8) *Orientation at a Distance*, Thauziès (Périgueux). Several experiments with pigeons were made to illustrate the author's views; (9) *The Perception of the Positions and Movements of our Body and Limbs*, Bourdon (Rennes); (10) *The Psycho-physiological Phenomena called "médiumnité physique*," Alrutz (Upsala).

Several general questions, concerning terminology, colour standardization, method of notation of mistakes in evidence, experiments, etc., were discussed.

Forty or fifty individual communications were presented, of which the following may be mentioned:—Brown (London), The Use of the Theory of Correlation in Psychology, together with some experimental results; Ettlinger (Munich), The Development of the Sense of Space in Animals; Jerusalem (Vienna), The Biological Point of View in Psychology; Ladame (Geneva), Religious Psychology and Psycho-pathology; Mrs Ladd-Franklin (Baltimore), The Theory of Colour-theories; Max Meyer (Columbia), Experiences with an Objective Method of Determining Capacities of School Children in Examinations; Peters (Frankfort), Experimental Investigation of Similarity Associations; Riley (Poughkeepsie), Mental Healing in America; Szecsi (Geneva), Psychical Compensations as a Transition from the Normal to the Pathological; Yerkes (Cambridge, Mass.), Scientific Methods in Animal Psychology.

The next Congress will be held in America in 1913. Professor William James was elected to be President of Honour, and Professor Mark Baldwin Acting President.

The social arrangements were, thanks to the untiring efforts of the Secretary, Professor Claparède, unusually excellent.

Ernest Jones (Toronto).

BOOKS AND PAMPHLETS RECEIVED.

Nolda. "Über die Indikationen der Hochgebirgskuren für Nervenkranke." Zweite Aufl. Marhold, Halle, 1909. M. —50.

Haymann. "Kinderaussagen." Marhold, Halle. 1909. M. 1.

Dannemann, Schober und Schulze. "Enzyklopädisches Handbuch der Heilpadogogik." Lieferung I. Marhold, Halle, 1909. M. 3.

Joris. "Les voies conductrices neurofibrillaires." Rapport au Congrès Belge de Neurol. et de Psychiat., sept. 1909. Severeyns, Bruxelles.

Mairet et Salager. "La Folie Hystérique." Coulet et fils, Montpellier, 1910.

T. Graham Brown. "Eine neue Methode, Herzbewegungen bei Tauben zu registrieren." Trübner, Strassburg, 1909.

"Klinik für psychische und nervöse Krankheiten," Bd. iv., H. 2, 1909. Marhold, Halle. M. 12.

J. Gordon Wilson. "The Nerves of the Atrio-ventricular Bundle" (*Proc. Roy. Soc.*, B, Vol. lxxxi., 1909).

Marsh and Williams. "The Treatment of Cerebro-spinal Meningitis in Children with Flexner and Joblin's Anti-Serum" (*Liverpool Med.-Chir. Journ.*, July 1909).

Rebizzi. "Indagine anatomo-clinica sul sistema nervoso nell' uomo colpito da trombosi dell' aorta addominale." Tipografia Perugina già V. Santucci, Perugia, 1909.

Voss. "Wichtige Entscheidungen auf den Gebiete der gerichtlichen Psychiatrie." Achte Folge. Marhold, Halle, 1909. M. 1.

Review
of
Neurology and Psychiatry

Original Article

THE PATHOLOGY OF AMYOTROPHIC LATERAL SCLEROSIS.

By GORDON HOLMES, M.D., M.R.C.P.,
Assistant Physician to the National Hospital for the Paralysed and Epileptic;
late Director of the Nervous Diseases Research Fund.

So much has been written on the pathology of amyotrophic lateral sclerosis that further contributions may appear unnecessary, unless new methods have been applied to the investigation of the disease, as it might be expected that very little new information could be offered. But the more the disease is studied the more evident does it become that quite apart from its pathology there are many points in its morbid anatomy that require further research or confirmation.

During the past four years I have been able to make complete post-mortem examinations on ten cases. Six of these died in the National Hospital for the Paralysed and Epileptic, and for permission to make use of them I am indebted to the kindness of my colleagues on the Staff; Dr Ormerod and Dr J. R. Lunn kindly furnished me with the post-mortem material from the other cases.

These ten cases included all the clinical types of the disease; in some it set in with bulbar symptoms, in others spastic symptoms were for a time the most prominent; while in two cases at least the disease ran its course under the picture of progressive muscular atrophy without definite *clinical* evidence of involvement of the cortico-spinal neurones. The course of the disease also varied very much; its longest duration was four and a half years, its shortest, in a very characteristic case, was only three and a half months; its average length was about twenty-one months. The age of the patients varied between forty-five and seventy-two years; there was no close parallel between the age of the patient and the rapidity or the type of the disease.

The same anatomical lesions, with unimportant variations, were found in all cases, and it is consequently unnecessary to claim the space that would be required to give the details of the clinical histories of, or the pathological changes discovered in, the individual cases.

METHODS.

The central nervous system of each case was obtained as soon as possible after death, and was immediately placed for fixation and hardening in a 10 per cent. solution of formaline in normal saline solution. After a few days, when the tissues had acquired sufficient consistence, they were cut up and further prepared for the different methods of examination that were employed. The chief methods used were those of Marchi and Nissl, but Weigert's method was also used, especially for the spinal cord and forebrain. In the examination of the spinal cord pieces were taken from a large number of segments for each method. As it was necessary to examine the brain-stem as far as possible in continuity as regards the state of its fibres and cells, it was divided into thin slices a few millimetres in thickness, and these were alternately treated by the Marchi and Nissl methods; in this way it was possible to trace the degenerated fibres with fair accuracy, and at the same time obtain a knowledge of the state of the cells of the chief masses of grey matter. The basal ganglia and the internal capsule were examined chiefly in Marchi preparations, but in almost every case some sections stained by thionin were obtained through the optic thalamus and the corpus striatum.

The present communication will deal largely with the state of the cerebral cortex, and to the examination of this part special attention was directed. It seemed advisable to examine the state of both the cells and myelinated fibres in each hemisphere, and especially in the region of the central sulci; large slabs of the brain, including in their middle the central gyri and as much white matter as possible, extending as a rule down to the internal capsule, were consequently cut out of each hemisphere, and the positions from which they were removed were recorded accurately on drawings or diagrams. These pieces were treated, after mordanting in a chrome salt solution, by Marchi's method, and for the same purpose similar slabs of tissue were taken from other lobes of the brain so that all the important regions were represented. The remaining portions of the central gyri and pieces from other regions of the cortex were prepared for Nissl's method. In several of the cases pieces of cortex were also stained by Weigert's method, or Pal's modification of it.

In the majority of the cases the corpus callosum was examined in Marchi preparations taken transverse to the direction of its fibres, or in sections including the cortex and white matter of the upper part of the hemisphere.

My own observations will be first described as concisely as is compatible with clearness, and in the last section an attempt will be made to consider their significance, and to correlate them on the points of most interest or importance with those recorded by others in the literature of the subject.

MORBID ANATOMY.

Grey Matter of the Spinal Cord.—The most prominent lesions of the grey matter of the spinal cord were in every case limited to the ventral horns. The primary change was beyond doubt a degeneration of the nervous elements, especially of the large radicular cells, and the neuroglial proliferation and the vascular reaction that were sometimes present were purely secondary to this. The changes naturally varied with the local incidence of the disease and the rate of its evolution; they were generally most intense in the lower segments of the cervical enlargement from which the muscles of the hands and fore-arms are innervated, but in two cases in which the wasting of the muscles set in in the lower limbs the most advanced lesions were found in the lumbo-sacral segments.

The most prominent change was the disappearance of many of the larger cells that give origin to the ventral root fibres; the different stages of the degeneration of these cells could be usually traced in any one spinal cord. They first showed evidence of a general atrophy and reduction in size; frequently the tigroid masses persisted as fairly well-defined structures, or they might undergo a gradual disintegration throughout the cells, so that these stained diffusely or even homogeneously. In other cells there appeared to be a conglomeration of the chromatophilic elements into masses larger than normal, which usually lay on the periphery or beside the nucleus. Simultaneously the cell processes became indistinct and gradually disappeared by atrophy; the affected cells rapidly diminished in volume and became more rounded or spherical in shape than normal. Their nuclei generally diminished in size parallel with the shrinkage of the whole cell, becoming at the same time distorted or irregular in shape, but I have repeatedly seen the nucleus swollen and its chromatin disintegrated entirely out of proportion to the intensity of the other changes in the cell. As the cells atrophied, and occasionally even before they showed any definite structural change, pigment began to accumulate within them, generally around a single focus at one pole of the cell or near the nucleus, but sometimes two different masses might be seen on opposite sides of the nucleus, which fused as they increased in size. The deposition of pigment may be thus the first visible change, or it may follow the atrophy or degeneration of the cell. The pigment was usually bright yellow in Nissl preparations, but it had not always the same tint; it was darker in colour, but not definitely black, in sections that had been treated with osmic acid.

This pigment seemed to exert very little influence on the cell, merely displacing the nucleus and tigroid, but the tigroid clumps were occasionally unnaturally granular or massive on its borders, and sometimes the disintegration of the tigroid spread from here over the rest of the cell. As the atrophy advanced the protoplasm of the cell and its tigroid gradually disappeared, the nucleus shrank and became displaced towards the periphery, and the cell was eventually represented only by a spherical mass of pigment, apparently contained within the original cell wall, but smaller in bulk than the average ventral horn radicular cell. For a time the remains of the shrunken nucleus and a little basophilic protoplasm were often visible on one border of this mass of pigment, but they soon disappeared. Later these masses of pigment became disintegrated, frequently by the invasion of neurophages which apparently ingested them, and finally the site of the cells might be marked only by clumps of neurophages laden with characteristic yellow pigment. The cells of the ventromedian group of the ventral horns were usually less affected than those of the lateral groups.

True chromatolysis could be rarely observed in the ventral horn cells, but in the cases of acute course there could be occasionally seen a swelling of the whole cell with disintegration of its perinuclear tigroid and excentration of the nucleus; this change, however, appeared invariably less acute than that which is seen in severe toxic affections of the central nervous system, or that which supervenes in cells after lesions of their axiscylinders.

Though these changes were most distinct and prominent in the larger cells of the ventral horns that give origin to the ventral roots, they were by no means confined to them; the smaller cells that lie in the more dorsal part of the ventral horns and in the intermediate grey matter, *les cellules retro-radiculaires* of the French authors, to which Jacobsohn has given the names tractus cellularum intercornaulis lateralis and tractus cellularum medio-ventralis, were similarly affected; I frequently received the impression that the degenerative changes involved these smaller cells at a later period of the disease than the radicular cells.

A proliferation of the neuroglia, indicated by a considerable increase in the number of its nuclei, the presence of abnormally coarse fibrils and of large Deiter's cells with branching processes, could be generally seen in the more affected regions of the ventral horns; this neuroglial proliferation had, however, only the characters of a secondary process that supervenes on the degeneration of the nervous elements. There was also in the majority of the acuter cases, but less evident or absent in those of slower course, some vascular reaction in the affected ventral horns; the vessels were congested and engorged, their perivascular spaces appeared dilated and occasionally contained a coagulated exudate, and exceptionally a round-cell infiltration of mild degree was present in their adventitial sheaths. Recent hæmorrhages were also found in the spinal grey matter of a few of my cases, but they must have occurred only immediately before death in the terminal asphyxial stage of the disease; I can certainly not accord them any pathological significance. In none of the ten cases did I discover any noteworthy disease of the vessel walls.

The use of Weigert's method revealed a considerable loss of myelinated fibres in the ventral horns, which was on the whole parallel to the affection of the nerve cells: it was most prominent by this method in the more chronic cases. The only fibres that remained intact are those that come from the dorsal roots. By Marchi's method it could be seen that not only the ventral root fibres, but also those that pass across the ventral horns, and enter the ventral commissure and the ventro-lateral columns, were degenerated.

The disease of the grey matter was practically confined to the ventral horns. The lateral horns were unaffected in all my cases; since Dr Bruce drew attention to their significance their cells have been systematically examined. Owing to the natural appearance of the cells of Clarke's column, and their well-recognised tendency to accumulate pigment, it is less easy to make an absolute statement on their condition, but with the exception of one case, in which there were possibly some degenerative changes, the cells and the myelinated fibres that enter the column appeared intact. On the other hand, there were definite atrophic changes in a few of the larger cells of the dorsal horns in some of my cases, chiefly in that group that lies in the centre of the horn to which Jacobsohn has given the name nucleus magnocellularis centralis.

Grey Matter of the Brain-stem. — The most pronounced changes were found in the nuclei of the motor cranial nerves, in the XII., XI., VII., nucleus ambiguus and the motor nucleus of the V. The affection of these nuclei was very similar to that of the ventral horns; it was present even in some cases in which there were no bulbar symptoms during life. It was always in the hypoglossal nucleus that the degenerative changes were most advanced and most intense; in a chronic case that set in with bulbar symptoms scarcely a single cell remained. The accessory hypoglossal nucleus of Roller seemed intact in all my cases. The facial nucleus suffered similarly, but the affection of its cells was never so extreme as in the hypoglossal nucleus; in two cases in which this nucleus was cut in serial sections, as well as in other cases in which the examination was not so complete, the disease was found, when Nissl's method had been used, practically limited to the ventral and lateral cells of the nucleus. This fact is of interest, as it tends to show that the upper branch of the facial nerve, which is rarely much affected in bulbar palsy, takes origin from the dorsal part of its nucleus, as Marinesco and van Gehuchten found by experiments on animals, and as Parhon and Minea have demonstrated in man.

Even in the case in which it was most affected the nucleus ambiguus contained a considerable number of normal cells; no disease was detected in the dorsal vagus nucleus or in the cells of the fasciculus solitarius. In five of the cases degenerative changes were observed in the motor nuclei of the trigeminus, but they were neither so extensive or intense as in the bulbar nuclei. No disease was detected in the nuclei of the oculo-motor, trochlear or abducent nerves, or in the terminal nuclei of the sensory cranial nerves.

As the brain-stem was not cut in serial sections to be stained by Nissl's method in any one of the cases, it is impossible to make an absolute statement on the absence of degenerative changes in the cells of the other nuclei that it contains. On the other hand the method I have employed, the treating of alternate slabs of tissue by Nissl's and Marchi's method, has frequently permitted a valuable control of the changes observed by the one method. The cells of the olives seemed invariably intact, but a few diseased cells were found in the lateral nuclei in two cases. The cells of the dorsal column nuclei and the rest of the grey matter of the medulla escaped always, but unmistakable changes, generally in the form of chromatolysis, were found in the large cells of Deiter's nucleus in three cases. The pontine nuclei and the various nuclei of the tegmentum of the pons and midbrain were always unaffected, and no pathological changes were observed in the Purkinje cells or in the cells of the central nuclei of the cerebellum. The cells of the optic thalamus and corpus striatum were found normal in all regions of the ganglia that were carefully examined in Nissl preparations.

The White Matter of the Spinal Cord and Brain-stem.—The white matter of the spinal cord and brain-stem was studied most satisfactorily by Marchi's method, though to one of the more chronic cases this method was not properly applicable, as the fatty products of the degeneration of some of the tracts that had suffered earliest had been largely removed. In all cases the examination of the cord was supplemented by the study of sections stained by Weigert's method or Pal's modification of it.

The characteristic change in the white matter of the cord is, as is well known, a diffuse degeneration of the ventro-lateral columns, usually greatest in the areas that contain the cortico-spinal fibres both direct and crossed, and of the intra-medullary portions of the ventral roots. The degenerated fibres of the latter could be followed in Marchi preparations from the ventral horns to their place of exit; it is a remarkable fact to which fuller reference must be made later in dealing with the peripheral nerves, that though there may be apparently complete disintegration of their medullary sheaths within the spinal cord, there may be no evidence of degeneration visible by Marchi's method in the extra-medullary segments of the roots, or, more correctly, beyond the limit to which neuroglia extends along the roots; and beyond this point the sheaths may stain well by Weigert's method.

The pyramidal tracts were degenerated in all the cases of amyotrophic lateral sclerosis, and in those that appeared clinically to be merely progressive muscular atrophy or bulbar palsy, that I have examined. The direct and crossed pyramidal tracts were equally involved when the former existed, and could be usually defined with fair accuracy from the rest of the white matter by the more intense degeneration of their fibres, but as the surrounding tracts also degenerate, the areas that the cortico-spinal fibres occupy were never so distinct in either Marchi or Weigert-Pal sections as they are in cases in which there is a pure secondary degeneration of these bundles. It was chiefly the ventral borders of the crossed pyramidal tracts that were not accurately definable; the pallor that indicates degeneration in Weigert-Pal preparations extended unduly far ventralwards. This is owing to the fact that this border of the crossed pyramidal tract is not sharp, as here its fibres mingle with those of the adjoining part of the ventro-lateral ground bundle; and as many of the latter are also degenerated, the areas in which the two different sets of fibres occur together appears the more severely affected, and is consequently not distinguishable from the purely pyramidal area.

It was evident in the majority of the cases that the degeneration of the pyramidal tracts was of longer duration and more intense—that is, a greater proportion of its fibres were involved, in the lower than in the higher segments of the cord; this was more definite in the cases of chronic than in those of acute course. The medullary sheath stains showed that there was a greater pallor in the lower than in the higher segments, and in Marchi preparations the products of degeneration that this method made visible showed more evidence of absorption and a greater tendency to conglomerate and accumulate round the vessels and septa in the more caudal segments. But the earlier and severer affection of the terminal portions of the pyramidal fibres is yet more distinct when these fibres are reviewed in their whole length from the cerebral cortex to the segments of the spinal cord in which they end. In one of my cases the direct ventral pyramidal tracts apparently did not exist; in another case these contained the greater proportion of the pyramidal fibres and could be followed to the second lumbar segment, and in a third there was a direct ventral tract on only one side.

The degeneration of the rest of the ventro-lateral columns was very diffuse, and in some cases fairly uniform over their whole area, but, as mentioned already, the degeneration was never so great in any other part of their cross-section as it was in the region of the pyramidal tracts. There can be no doubt that these degenerated fibres were the internuncial fibres of various lengths that connect different segments of the cord with one another; they take origin in all probability from the smaller cells of the ventral horns that we found degenerated in the Nissl sections. They are arranged according to the well-known law that the shorter fibres lie nearer the grey matter, the longer nearer the periphery. The affection of these fibres was parallel to that of the grey matter, and was consequently always most marked between the fifth cervical and the lower lumbar segments, and was less in the sacral and higher cervical regions. In the dorsal and lower cervical segments the proportion of fibres degenerated was greatest in the immediate neighbourhood of the ventral horns, as the ground bundles are here composed entirely of short fibres that connect adjacent segments of the cord with one another. In the higher cervical segments, on the other hand, in which the disease of the grey matter was less intense, the shorter fibres that lie immediately adjacent to it were affected in smaller proportion than were the longer fibres that have their cells of origin in lower segments and run towards the brain stem nearer the periphery of the cross-section (compare Figs. 1 and 2). The part of the ventro-lateral ground bundles most free from degeneration was that that lies around the lateral horns and between these and the ventral borders of the crossed pyramidal tracts. Another zone that usually contained but few degenerated fibres was that which lies on the lateral border of the dorsal horns in the regions in which the pyramidal tracts do not impinge directly on these.

The dorsal roots escaped invariably, and though I found fine scattered granules stained by the Marchi method in the dorsal columns in a few of the cases, there was no definite system degeneration visible in these either by this method or in Weigert preparations, excepting the intra-medullary fibres of one sixth cervical root in one case. In three cases, however, there was a slight sclerosis of the column of Goll in the cervical segments visible in sections stained by the medullary sheath method.

But perhaps in no part of the cord, excepting the pyramidal tracts, was the degeneration so great as in the ventral commissure : the degenerated fibres which run in it longitudinally in transverse sections of the cord could be usually traced from the ventral horns and the intermediate grey matter into the opposite ventral columns. The intensity of the degeneration was, on the whole, parallel to the disease of the ventral horns, and was consequently greatest in the lower cervical and the dorsal segments.

The state of the spino-cerebellar tracts is of considerable interest; it is evident that a definite statement on their condition can be made only after the careful examination of Marchi specimens. In the spinal cord, and especially in the dorsal segments, granules stained black with osmic acid could be found in nearly every case in the areas of these tracts, but these granules *may* represent only fibres of the ventro-lateral ground bundles or of the pyramidal tracts that lie within their areas, for it cannot be maintained that any region is reserved exclusively for the fibres of a single system. A definite conclusion could be therefore attained only from the examination of the brain-stem and cerebellum, where the spino-cerebellar fibres can be identified by their position and course. This was carried out in all my cases by the Marchi method, and in seven I was able to convince myself beyond doubt that certain fibres, and in many a considerable proportion, of both spino-cerebellar tracts were degenerated. In these cases I followed the degenerated fibres from the highest cervical segments into the lateral border of the medulla oblongata immediately ventral to the spinal trigeminal root (Fig. 3), and later into the angle between this and the inferior olive (Fig. 4). Here the degenerated fibres divided into two separate bundles; the one turned immediately dorsalward around the spinal trigeminal root and joined in the formation of the first rudiment of the corpus restiforme, and when this increased in size on receiving fibres from other regions lay in its lateral part. In this position they could be traced in each of these cases into the vermis of the cerebellum, chiefly into its anterior portion; thus these fibres followed the characteristic course of the direct cerebellar tract. The rest of the fibres passed cerebralwards in approximately the same position, and in the pons continued to lie ventro-medial to the spinal trigeminal root. At the level of the entrance of the trigeminal roots these fibres turned dorsalward, passed around the outer border of the superior cerebellar peduncle where this entered the midbrain, and finally entered the middle lobe of the cerebellum over this peduncle and through the anterior medullary velum. This bundle of fibres must be consequently identified with the tractus spino-cerebellaris ventralis, or Gowers' bundle. As these degenerated fibres intermingled in the cerebellum with those that entered it through the corpus restiforme, they could not be traced accurately to their termination, but both sets of fibres seemed to end exclusively, or almost so, in the vermis. These tracts carried all the degenerated fibres that were found in the cerebellum, except the few isolated ones that lay in the superior and middle peduncles in one or two of my cases.

The degenerated fibres of the ventro-lateral columns diminished in number and became more peripheral in the highest cervical segments (Fig. 2). They continued to lie in the same relative position at the transition of the cord into the medulla oblongata—that is, around the ventral horns—but separated from the periphery by the pyramids (Fig. 3). They soon divided into two groups. The one consisted of diffusely scattered fibres that at first lay around the caudal end of the inferior olive and at a slightly higher level in the formatio reticularis dorsal to it (Fig. 4), chiefly around the dorsal accessory olive, in both of which some of them may end. Above this level they diminished rapidly in number, and, as a rule, had disappeared entirely in the upper third of the medulla. They apparently end in the reticular formation, at least I could not trace them satisfactorily to a termination in relation to any mass of grey matter.

The other group of degenerated fibres that entered the medulla from the ventro-lateral columns of the cord passed into the dorsal longitudinal bundles and the longitudinal bundles that lie ventral to these on either side of the raphé (Fig. 4). It is true that the dorsal longitudinal bundles do not form compact tracts that are separable in normal preparations from the other bundles that run in their neighbourhood, but these degenerated fibres spread so far ventralwards that all cannot be included in the dorsal longitudinal bundles. The number of degenerated fibres in this group varied considerably in the different cases, but in all it was considerable at the lowest end of the medulla oblongata. They diminished in number as they were traced cerebralwards in sections, and became collected more compactly together towards the dorsal border of the raphé. The diminution in number was more rapid in the lower part of the pons Varolii, and above this level relatively few degenerated fibres could be found, but in every case, except two, I succeeded in tracing some by Marchi's method to the oral end of the midbrain. Their termination could not be ascertained with certainty, as they evidently lose their myeline sheaths before they end in any mass of grey matter (Fig. 5).

Isolated fibræ arcuatæ internæ were degenerated in a few cases, and in one case a few fibres that seemed to belong to the olivo-cerebellar system, but all the other transverse fibres of the bulb escaped.

In three cases I found degenerated myelinated fibres in Deiter's nuclei; it is, of course, known that Gowers' tracts send fibres and collaterals to these nuclei, but in these three cases the degeneration in the nuclei was out of all proportion to that of Gowers' tracts, and the fibres could not be followed from the latter into the nuclei; consequently they probably represented fibres that take origin in these nuclei (fibræ vestibulo-spinales). This view conforms to the fact that in these three cases degenerative changes were detected in the cells of these nuclei. On the other hand I was unable, except in one case, to trace these fibres into the course of the vestibulo-spinal tracts, but this may have been due to the fact that there were very few fibres degenerated, and that they were soon lost among those that ascend from the ventro-lateral columns of the cord.

In two cases a few of the transverse fibres of the pons and middle cerebellar peduncles were found in degeneration, but they were scattered and very few in number. In the same two cases a very few of the fibres of the superior cerebellar peduncles were similarly affected.

In several of the cases there were also a few scattered fibres in degeneration in the inter-olivary layer in the caudal part of the medulla oblongata, which, when traced cerebralwards, diminished somewhat in number; but some entered the median fillet and could be followed in this to the oral end of the brain-stem. In four cases there was a much greater amount of degeneration in the median fillet in the upper part of the pons and the posterior portion of the midbrain. When traced in serial sections the greater number of these degenerated fibres were seen to come from the degenerated pyramidal fibres of the crus; in the caudal half of the midbrain these turned dorsalwards from the dorso-lateral angle of the degenerated pyramidal fibres, crossed the substantia nigra, and entered the median fillet, in which they could be followed caudalwards (Fig. 5). I have not succeeded in tracing them to their termination with certainty, but some seemed to pass towards the nuclei of the motor cranial nerves; the presence of degenerated fibres in other parts of the brain-stem made these cases unsuitable for definite anatomical observations.

A degeneration of the pyramidal tracts was present in all my cases throughout the whole length of the brain-stem. In the bulb the degenerated fibres were scattered fairly uniformly through the cross-section of the pyramids, but in the pons they lay chiefly in the middle bundles of longitudinal fibres; in fact, the dorso-lateral and ventro-medial bundles, those that carry the cortico-pontine fibres, were usually free or almost so. In the midbrain the degenerated fibres were entirely limited to the middle third of the crus, Türck's bundle in the outer part and the fronto-pontine tract in its mesial fifth being entirely free from degeneration. In all the cases, except in the more chronic to which the Marchi method was not properly applicable, the degeneration of the cortico-spinal fibres seemed almost as intense in the brain-stem as it was in the spinal cord. On the other hand there could be no doubt that in the majority of the cases the degeneration was more recent in the brain-stem than it was in the spinal cord, especially in the lower segments of the latter.

Finally degenerated fibres were found in the intra-medullary portions of the roots of several of the cranial nerves. The hypoglossal was always the most severely affected, but the vagus also contained degenerated fibres in the majority of the cases; these could be traced only from the nucleus ambiguus; none were found in connection with the dorsal vagus nucleus or the fasciculus solitarius. The facial nerve and the motor root of the trigeminus were usually affected, the former occasionally very severely and always more than the latter. In one case a few degenerated fibres were seen to pass from the trigeminus nucleus towards the dorsal margin of the raphé. The affection of the roots of the motor cranial nerves was approximately parallel to the changes discovered in their nuclei by Nissl's method. I failed to find any evidence of degeneration in either the intra- or extra-medullary portions of the roots of the ocular nerves; in a few of my cases black granules were visible along the roots of the oculomotor nerves near their exit, but these fat droplets are frequently present in perfectly normal brains, and they had not the character of the fatty products of the degeneration of myelinated fibres.

In addition to the changes that have been described, sections stained with thionin, and more particularly with van Gieson's picro-fuchsin, showed a considerable amount of neuroglial sclerosis in the positions of the more severely affected tracts of the spinal cord, especially in the pyramidal tracts. Not only did the matrix stain deeply and contain abnormally coarse glia fibrils, but definite Deiter's cells with long branching processes could be seen. Finally the degeneration of the myelinated fibres was accompanied by some engorgement of the vessels, and irregular coarse granular masses that stained black with osmic acid were occasionally present in their perivascular spaces, especially in the more chronic cases.

Peripheral Nerves.—Unhappily the peripheral nerves were not examined systematically in all the cases, but when they could be obtained those that took origin from the most diseased segments of the cord and supplied the most affected muscles were chosen. In a few of the cases, especially in the acute ones, a considerable amount of degeneration could be seen; in others there was extraordinarily little affection visible by any method of examination, especially when considered in relation to the amount of disease in both the spinal cord and the muscles. This fact might be explained by the assumption that the products of degeneration are removed from the peripheral nerves so rapidly that the Marchi method is not suitable for demonstrating changes in them in a relatively chronic disease, but the observations made by this method were frequently confirmed by the positive pictures that the Weigert-Pal method gives. The argument that as the peripheral nerves, even those branches that pass only to the muscles, contain such a large proportion of sensory fibres that if the degeneration be limited to motor fibres it must necessarily appear relatively slight, fails from the fact that even in the extra-medullary portions of the ventral roots the proportion of degenerated fibres was very small, and in two cases quite absent.

The White Matter of the Forebrain.—In all my cases the degeneration of the pyramidal tracts was followed from the middle third of the crus into the posterior limb of the internal capsule; the degenerated fibres were entirely limited to the anterior half of this, and never extended into or in front of the genu. In the majority of the cases the cortico-spinal fibres appeared affected as severely in the internal capsule as in any part of the brain-stem or spinal cord, but the degeneration usually appeared more recent. From here it was traced in every case, too, to the cortex of the central convolutions; it was always greater in the paracentral lobule and towards the upper end of the fissure of Rolando than in the lower half of these convolutions.

The distribution of the degenerated myelinated fibres in the cortex was studied as accurately as possible in every case. In three they were found only in the anterior central gyrus—that is, they did not extend behind the fissure of Rolando, and in all the others the great majority lay within it; the proportion that was present in the posterior central gyrus was much smaller. A large number of these degenerated fibres could be followed from the internal capsule through the white matter of the hemisphere and into the medullary rays as far as the layer of infra-granular pyramids, but others seemed to end at the junction of the cortex and white matter. They were most numerous towards the posterior margin of the anterior central gyrus—that is, near the bottom of the fissure of Rolando, and rapidly became sparser towards the anterior border of the area that contained them (Fig. 6). This coincided roughly with the area that can be marked out as the region of origin of the pyramidal tracts by the study of the retrograde chromatolysis of the cortical cells after section of the cortico-spinal fibres (Holmes and May). In the paracentral lobule and at the apex of the hemisphere it extended forwards about 15 to 20 mm. from the upper end of the central fissure into the superior frontal convolution, but it gradually diminished in breadth from here downwards on the lateral surface of the hemisphere, and at the level of the inferior genu it extended only a few millimetres in front of the fissure. In no case were they found as far lateralwards as the lower end of the fissure.

It was not only the medullary rays and the fibres that run vertically to the cortex that were affected, for in some cases a small number of the fibres of the inter- and supra-radiary layers were found in typical degeneration, though the number of these was small; I never detected any disease in the tangential layer.

The affection of the posterior central gyrus is of such importance that the distribution of the degenerated fibres within it deserves special reference. In most Marchi preparations in which the two central gyri and the underlying white matter were included, it was evident that a considerable proportion, and in some cases the great majority, of the degenerated fibres that were found in it came from the anterior central gyrus by bending round the bottom of the fissure of Rolando (Fig. 6); though it was impossible to place the observations beyond doubt in these preparations, I frequently received the impression that these fibres were actually collaterals of the degenerated fibres of the anterior central gyrus. They could be rarely traced into the cortex through the medullary rays ; in fact, many seemed to run horizontally through the cortex after passing the bottom of the central fissure. But in other of my cases degenerated fibres could be traced from the upper part of the internal capsule directly towards the posterior central gyrus, but they were always very few in proportion to those that passed to the anterior central gyrus; other fibres could be traced to it from the corpus callosum. The degenerated fibres that entered the posterior central gyrus were in every case practically limited to that portion of it that forms the posterior wall of the fissure of Rolando. None of the horizontal fibres of the cortex of this gyrus were found in degeneration.

The rest of the cerebral cortex, excepting only these central gyri, was invariably free from degenerated myelinated fibres, or contained at the most only a few fibres that stained a deep brown colour with osmic acid, such as may be found in the brains of many persons that die after prolonged illnesses.

The cerebral cortex was also examined in Weigert-Pal preparations in several of the cases, but considering the small proportion of fibres of any class that are affected, this method could not be expected to give much accurate information. In the acuter cases, in fact, I failed to recognise any pathological change in even the anterior central gyrus, and in the more chronic ones the only definite change was a rarefaction of the medullary rays of this gyrus. The various layers of horizontal fibres appeared at the most very little affected.

The corpus callosum was unhappily examined fully in only six cases, and in all these a large number of degenerated fibres were found within it; they were entirely limited to its middle third, the anterior and posterior thirds being always free. These degenerated fibres converged towards it from all parts of the central convolutions, but especially from the anterior; they were apparently direct commissural fibres between the central convolutions, as they could not be traced elsewhere. Those that take origin in the central region of one hemisphere must therefore, unless many become naked far from their terminations, end in the corresponding part of the opposite hemisphere.

In none of the cases could any degeneration be traced into the caudate or lenticular nuclei, but in three cases a small number of degenerated fibres passed from the posterior limb of the internal capsule into the latticed layer and the lateral nucleus of the optic thalamus, and here branched up in the dense network of myelinated fibres that occupies this region; they apparently ended in these nuclei. In the two cases in which degenerated fibres were found in the superior cerebellar peduncles they could be traced into the ventral nuclei of the thalamus.

Cerebral Cortex.—My interest was originally attracted to the pathology of amyotrophic lateral sclerosis by the publications of Spiller, Campbell and others, who have ventured to draw conclusions on the regional origin of the pyramidal tracts, or to map out the so-called " motor area " of the pallium, by the distribution of the pathological lesions they discovered in the cerebral cortex in this disease. For they have almost unanimously assumed that amyotrophic lateral sclerosis " is essentially a disease of the motor system " (Spiller), and that consequently that the localisation of the disease in the cerebrum must coincide with the cortical " motor area." This matter will be dealt with later.

The whole of the central gyri in my cases, excepting the portions treated by Marchi's method, was divided into small pieces, the exact position of each being marked on drawings or photographs of the hemispheres, and the sections obtained from them were stained by thionin. I was thus able to record accurately the distribution of the cortical changes. Several other regions of the cortex were similarly examined.

For the purpose of description my cases may be divided into two groups, the one containing those in which the disease lasted two years and longer (four in all); the other cases of rapid course, in which the duration of the disease was twelve months or less. The changes found in the first group will be most conveniently described first.

At the outset it may be stated that the pathological changes were entirely limited to the two central convolutions; none were discovered in any other region of the cortex.

It was always the anterior central gyrus that was the most severely affected. In the chronic cases the most striking change was a great diminution in number, or an almost complete disappearance of the giant Betz pyramidal cells of the sixth layer that characterises this region. The numerical diminution was estimated in many cases by counting all that were visible in a series of sections and comparing the average thus obtained with the normal. In one case in which the disease, which set in with spastic symptoms, had lasted three and a half years, scarcely a single giant cell could be seen in any part of the anterior central or in the paracentral gyrus; in the other chronic cases the diminution was also remarkable, always to less than one-third of the normal number. Further, a large proportion of those that remained were shrunken and atrophied, contained a great excess of pigment, or were represented merely by a mass of pigment with a distorted nucleus by its side. The evolution of this change was easily studied in the more acute cases, in which the numerical reduction was less marked or absent. It usually commenced with a general shrinkage of the cell, a dissolution of the tigroid in its axonal or perinuclear regions, and almost invariably the accumulation of bright yellow pigment in one or other of these regions. As the cell became smaller its dendrites became less distinct and gradually disappeared, its shape less angular or more round, and its nucleus, which was for a time intact, shrank, and became irregular in shape and frequently displaced from the centre of the cell. As these changes advanced the pigment increased, and the chromatophilic elements of the cell gradually disappeared, till the cell was represented merely by a mass of pigment contained within the cell-wall, with the distorted nucleus by its side. I have repeatedly seen the nucleolus become irregular and break up. Finally, these masses of pigment were invaded and broken up by neurophages which ingested the pigment, so that ultimately the site of the cell was indicated only by a group of neurophages laden with its pigment.

Though this pigmentary degeneration, as it may be called, though I do not regard the deposition of pigment as the primary or essential process, was remarkably general in all the cases, it was by no means the only form of degeneration that was present. In the acuter cases some cells underwent a form of subacute chromatolysis, and finally appeared as pale inflated elements which were quite colourless or stained almost uniformly a pale blue tint, with the nuclei excentric and without visible processes; these cells contained little or no pigment. Vacuoles were observed in a few cells. The chromatolysis was occasionally seen to commence in the perinuclear region. Cells so affected apparently disappeared without the intervention of neurophages. In the acute cases a considerable proportion of the cells that persisted appeared structurally intact.

The Betz cells of all regions of the anterior central gyrus were involved, but those of the paracentral lobule and of the upper part of the gyrus were always the most severely affected in both number and degree.

In no case did I find any disease of the small cells of the anterior central gyrus, or of those of the seventh or polymorphic layer; but in every case except in two, in which the observations were doubtful, a few—very few in proportion to the number of Betz cells affected—of the larger pyramidal elements of the supra- and infra-granular layers were involved, but more especially in the latter. In the cases of acute course the changes seen in these cells were very similar to those that the Betz cells undergo, while in the chronic cases there was only a slight numerical diminution visible, or some were in chronic atrophy. I cannot lay much weight on the value of the observations from which there appeared to be only a numerical diminution of these large pyramidal elements, as their number varies considerably from section to section, and even in different portions of the same section; the observation of definite lesions in the cells, however, is unequivocal proof that the pathological process extended to them.

In five of my cases—some acute, others chronic—absolutely no pathological changes could be discovered in the posterior central gyrus, but in four of the other cases a few degenerating cells were found in its infra-granular layer in the posterior wall of the fissure of Rolando. These affected cells were, however, very sparse; frequently several sections had to be searched before one could be found. If it is remembered that it is not infrequent to find an extension of the precentral cortex behind the bottom of the fissure of Rolando, it was actually present in two of my cases, or isolated Betz cells within the cortical area that contains a well-marked lamina granularis, the interpretation of these changes in the posterior central gyrus will demand special care. I have no doubt, however, that some of the cells which I found affected really belonged to that type of cortex that covers the posterior central gyrus.

The methods of Nissl and van Gieson generally revealed definite changes in the matrix of the regions of the cortex that were affected. In the more chronic cases there was usually a considerable increase of neuroglial nuclei and a slight sclerosis of the deeper layers of the cortex of the diseased regions of the anterior central gyrus, and in almost all cases there was a congestion of the vessels, with occasionally a slight round-cell infiltration of their adventitial sheaths. In the subjacent white matter, too, there was frequently a proliferation of neuroglial nuclei and fibrils and vascular changes similar to those in the cortex, in the positions in which Marchi's method showed degenerated fibres. In addition, black granular masses were occasionally found here in the perivascular spaces in sections that had been treated with osmic acid.

REMARKS.

The study of these cases has brought out various points which are of sufficient interest to justify a further discussion on their significance, and their correlation with the observations of others who have investigated this disease.

The chief changes that I discovered that may be regarded as anomalous or rare were the degeneration of the spino-cerebellar tracts in a considerable proportion of the cases, of certain fibres in connection with Deiter's nucleus, of fibres in the superior and middle cerebellar peduncles, and degenerated fibres in the optic thalamus.

Degeneration of the spino-cerebellar tracts has been repeatedly observed, though in many cases examined by competent workers they have been found normal—for instance, in some of the cases recently published by Rossi and Roussy, and in the various cases examined by Mott. On the other hand, Pal found both degenerated in 1898, and followed the dorsal tract into the corpus restiforme. Sarbó saw the direct cerebellar tract as well as Clarke's column affected in two cases; in Hoche's and Pilcz's cases the ventral spino-cerebellar tract was alone involved, and instances in which both have been affected have been reported by Haenel, Joukovsky, Philippe and Guillain, Aoyama, Miura and Medea. In some of these cases there were also degenerative changes in Clarke's column ; in others these were normal (Aoyama Haenel, Philippe and Guillain). The spino-cerebellar tracts have thus been found affected in such a proportion of the cases that have been adequately examined that degeneration of them must be admitted to the pathology of the disease.

As far as I am aware no observer has hitherto described degenerated cells or myelinated fibres in Deiter's nucleus, though Alzheimer found some of the acoustic nuclei diseased in a complicated case, and Probst saw degeneration of the tecto-spinal and rubro-spinal tracts.

Degenerated fibres have been demonstrated in the superior cerebellar peduncles by the Marchi method by Spiller and by Czyhlarz and Marburg, though the latter authors doubted if the appearances they saw indicated genuine degeneration. I know of no parallel to the degeneration that was present in the middle cerebellar peduncles in two of my cases; but I must again point out that only a few isolated fibres were affected. They possibly came from Gowers' bundles, which were also degenerated in these cases, for Collier and Buzzard found that these bundles constantly give off fibres at the level of the entrance of the fifth root to the middle cerebellar peduncles.

The presence of degenerated fibres in the lattice-layer of the lateral nucleus of the optic thalamus, apart from those that could be traced from the superior cerebellar peduncles and from the fillet into the ventral portion of its lateral nucleus, is interesting; it has not been observed, as far as I know, previously. These fibres seemed to come, as far as they could be traced in my sections which were not serial and did not include the whole brain, from the cerebral cortex through the internal capsule, in which they were associated with the degenerated pyramidal fibres. They possibly represented collaterals of the cortico-spinal fibres, or more probably the independent cortico-thalamic fibres that Sachs and others have followed into the lateral nucleus and the lattice-layer from the central gyri. The fact that it was only in the central gyri that degenerated fibres could be detected by the aid of Marchi's method, and that only here any cortical disease existed, makes it necessary to assume that this was the region of the cortex from which they took origin.

A degeneration in the dorsal longitudinal bundles has been found in the majority of the cases that have been examined by Marchi's method since Muratoff first drew attention to it. Those who have remarked on it have mostly held that the degenerated fibres ascend from the ground bundles of the ventro-lateral columns of the spinal cord. Muratoff found these columns involved in all cases in which the bulbar fibres were affected, but on the other hand he thought that the affection of the latter was marked only when the hypoglossal and other bulbar nuclei were severely diseased. My own observations do not support this view. Hoche, too, thought that the nuclei of the ocular nerves, as well as of the facial and hypoglossal, gave degenerated fibres to, or received such from, the dorsal longitudinal bundles. Probst, on the other hand, believed the affected fibres descend from their nucleus (the nucleus of Darkschewitsch) in the upper end of the brain-stem; but the fact that the fibres constantly decrease in number cerebralwards, and that occasionally they cannot be traced as high as the nucleus, as in one of my cases, in two of Rossi and Roussy's, and in others, is strong evidence against this view. There can be no doubt that fibres ascending from the ventro-lateral columns of the cord reach the nucleus of Darkschewitsch; I have myself traced them in two cases of acute poliomyelitis that died in the early stage of the disease. Probst has also regarded the degenerated fibres that run through the brain-stem ventral to the dorsal longitudinal bundles as belonging to the spino-tectal tracts, but as these fibres usually disappear, or join the fibres that run near the dorsal margin of the raphé, in the upper end of the pons, and as they have apparently not been traced through Meynert's decussation, it seems probable that they represent only fibres that ascend from the ventro-lateral columns of the cord; fibres from here could be traced upwards on either side of the raphé by Marchi's method in acute poliomyelitis. In one of my cases, however, it seemed possible that a few of the tecto-spinal fibres—ventral longitudinal bundle—were degenerated.

The continuation of the degenerated fibres of the ventro-lateral columns of the cord into the brain-stem is of considerable anatomical interest; their distribution in amyotrophic lateral sclerosis corresponds closely to that which I have seen in acute infantile palsy, in which there was considerable destruction of the grey matter of the upper segments of the cord. The fibres that enter the dorsal longitudinal bundles, and those that run parallel but ventral to it on either side of the raphé, have been already considered; the rest have a much shorter course, and apparently terminate in the grey matter of the lower part of the medulla, some, it seemed to me, in the inferior olives and in the dorsal accessory olives. These fibres would, if this be so, represent the spino-olivary bundle that Dydýnski and others have seen in man. I traced them very definitely in the case of acute poliomyelitis, already referred to, and Page May has demonstrated them in the monkey and dog. The vestibulo-spinal fibres mingle with these degenerated fibres in the lower end of the medulla and in the ventral columns of the cord.

In all my cases, as in most of those that have been properly examined by modern methods, the degeneration of the pyramidal tracts was followed from the spinal cord to the cortex of the central gyri. In the acute cases it seemed as great—that is, as many fibres appeared involved in Marchi preparations, in the higher as in the lower segments, though, as has been already mentioned, if one can judge from the appearance and arrangement of the products of degeneration, it was older in the more distal segments. This was most evident in the more chronic cases, as in the cord there remained but little degenerated myeline to stain with osmic acid, while in the fore-brain the course of the individual fibres could be still easily followed by this method. Further, in some of these cases the medullary sheath stains showed an almost total destruction of the cortico-spinal fibres in the cord, while the bulbar pyramids were not affected to nearly the same degree, and there was only relatively slight pallor in the areas that contains these tracts in the crus and internal capsule. Both negative and positive methods, therefore, support the view that the degeneration sets in earliest and is most complete in the more distal segments of these fibres, and the disproportion is apparently greater the more chronic the disease is. This conclusion is further supported by the fact that in certain cases only the distal segments of the pyramidal tracts have been found sclerosed (Mott and Tredgold), or their degeneration could not be traced above the spinal cord (Lejonne and Lhermitte), or only as high as the pons (Puscariu and Lambrior); in fact, Ballet states, though it is scarcely correct, that in the majority of the cases the degeneration does not extend above the pons. Through these cases amyotrophic lateral sclerosis is related to those in which at the time of death the pyramidal tracts were still intact (J.-B. Charcot, Philippe and Cestan, Williamson, Cassirer and Mass).

But the lesions that have been repeatedly demonstrated in the cortex of the so-called motor region are perhaps of greatest interest. This region has been carefully studied as regards the condition of its myelinated fibres in both Marchi and Weigert preparations by several authors, but the investigation of the state of its cells, which requires much more patience and greater experience, has not been so systematic or satisfactory.

In 1883 Kojewnikoff first drew attention to the extension of the disease to the cortical level, as he found "*corps granuleux*" in the white matter of the Rolandic gyri, but especially in the anterior; they were not present in any other region of the brain. Two years later Charcot and Marie confirmed this observation on two cases, and Lennmalm repeated it in 1887. The introduction of Marchi's method permitted more exact observations in the hands of Mott, Probst, Spiller, Rossi and Roussy and others. All have found the degeneration greater in the anterior than in the posterior central gyrus; in those cases in which its distribution has been accurately described it was apparently very similar to what it was in my cases, and it was always confined to the Rolandic region. It was mainly the subcortical white matter and in the medullary rays of the cortex that were affected, but several have observed, in addition, disease of the horizontal layers either by Marchi's or by Weigert's method. In his first case Probst saw the tangential and supra-radiary layers definitely affected, while in another there was perhaps a slight loss in the inter-radiary layer. Rossi and Roussy also observed a loss of fibres in the inter- and supra-radiary layers, and Campbell found in two cases "a general lowering of the fibre wealth": in addition to the medullary rays the tangential layer and inter-radiary fibres were considerably affected. Sarbó on the other hand, found only the tangential layer involved, while in the three cases published by Mott and Tredgold all the horizontal fibre layers were intact. Nonne's case is unique, as in it a loss of the fibræ propriæ, as well as of the projection fibres, was discovered by Kaes in both the cuneus and the anterior central gyrus.

The extension of the disease to the cells of the cortex was first observed by Charcot and Marie, who found in two cases that *les grandes cellules pyramidales*, especially those of the paracentral lobule, had almost completely disappeared; but as their description evidently refers to both posterior and anterior central gyri, its exact interpretation is difficult. Many subsequent observers, too, have failed to recognise the essential difference there is between the structure of the two Rolandic gyri, and their terms have been frequently too vague to permit a definite opinion as to which cells they refer. This is especially so with regard to the Betz cells; from many sentences it would appear that their authors were not aware that these elements are found only in front of the central fissure.

In his first case Probst found the Betz cells diminished in number and many of those persisting altered, and the large pyramidal cells, apparently of both gyri, were similarly affected. In another of his cases the changes were limited to the anterior central convolution, but they involved the small and large pyramidal cells as well as the cells of Betz; in a third case there was less affection of the small pyramidal cells. Spiller found "the giant cells about as numerous as in the normal brain," and in the cases recorded by Medea and by Czyhlarz and Marburg there was no visible disease in any of the cortical cells. Sarbó, too, discovered no changes in the cortical cells in one case, but in another there was chromatolysis of many of the large pyramidal elements of both gyri. In one case Rossi and Roussy saw only the Betz cells affected: these were diminished in number and some were degenerated; in two other cases the Betz cells were almost completely absent and the cells of all layers of the anterior central gyrus were involved; in one of these a few atrophic cells were also present in the posterior central gyrus. Mott and Tredgold found in their first case "the large pyramidal cells of the third layer are diminished in number, and many of those which are present show important pathological changes . . . these degenerative changes are confined to the large cells, the small and medium-sized pyramids being quite healthy." There were apparently no alterations in the cortex in their other two cases. But it was by Campbell that the cerebral cortex has been most systematically studied in this disease. In his two cases the changes were limited to the precental area: the cortex was shallow, its lamination was distorted and scarcely recognisable, the large pyramidal cells and the cells of Betz were much fewer than normal, and many of those that persisted were in various stages of degeneration; in fact, only the zonal layer and the layer of small pyramids preserved an approximately normal appearance.

The main facts that can be deduced from these descriptions are: that the cortical changes may be absent, or at least not prominent, especially in cases of acute course,—in Spiller's case the duration of the disease was only twelve months, in Mott and Tredgold's, eleven months, in Medea's, six months, and in Czyhlarz and Marburg's, nine months; that it is usually the Betz cells of the anterior central gyrus that are most severely affected, but the degeneration frequently extends to the larger pyramidal elements of the anterior and posterior central gyri. And on the whole these conclusions agree with those that I have drawn from the study of my own cases.

We now meet the question, What is the significance and the proper interpretation of these changes? In what way are they related to the degeneration of the cortico-spinal fibres? To the latter question a direct answer seems possible, for as the area of the cortex affected at least includes the region from which the pyramidal fibres take origin, and as the degeneration of these is so intense, in many cases even up to the cortex, that the cells from which they arise could scarcely remain normal, it must be admitted that an intimate relation between the two pathological processes is extremely probable. Here we must turn to other work by which the exact origin of the cortico-spinal fibres has been determined. The only method by which this seems possible at present is the study of reactionary changes in the cortical cells after lesions of the pyramidal tracts; recent investigations have shown that it is only in the giant (Betz) cells of the anterior central gyrus and paracentral lobule that such changes can be found, and we may consequently conclude that it is only with these cells that the pyramidal fibres are directly connected (Holmes and Page May). The affection of the Betz cells, which is the most constant lesion of the cortex, must be consequently correlated with the degeneration of the cortico-spinal neurones; we shall later consider whether the degeneration of the cells or of the fibres is to be regarded as the primary, or if it is simultaneous and concomitant in both. The alterations in the large pyramidal cells, on which many authors have laid much stress, but which was relatively insignificant in my cases, may be related partly to the degeneration of the horizontal fibres of the cortex that has been demonstrated repeatedly by various methods—the authors who have observed the most intense affection of these elements are those who describe the most change in these cortical fibres (Probst, Campbell). But further, it must be remembered that the cortico-spinal are not the only fibres related to the central gyri that degenerate, for the callosal fibres in connection with them are very frequently involved, and I have discovered cortico-thalamic fibres in degeneration; the cortical cells other than the giant elements probably give origin to these systems of fibres.

It may be, however, argued against this view that the frequent affection of the ordinary large pyramidal elements of the central gyri in amyotrophic lateral sclerosis, in which the pyramidal tract degeneration is often spoken of as the "essential" lesion, raises a strong presumption that these cells of both central gyri have an intimate anatomical connection with the pyramidal fibres, or that these take origin from them. But there is an exactly analogous condition in the disease of the ventral horns of the spinal cord, in which the cells of the root fibres, and those that give origin to the internuncial and commissural fibres, degenerate simultaneously; yet no one will argue that therefore the latter cells must also give origin to lower motor neurone fibres, the degeneration of which is another "essential" lesion of this disease. The matter is more fairly and accurately stated by admitting that in part of the grey matter of these two levels, in the cerebal cortex and the spinal cord, there occurs more or less simultaneously, and probably independently of one another and in variable degree in different cases, a degeneration of cells of different categories and with different functions. That the cortical disease is limited to the neighbourhood of the origin of the upper motor neurones is, however, an interesting fact, of which the explanation is not at present apparent; but in the spinal cord, too, the disease of the grey matter is more or less limited to certain regions.

Degeneration of the corpus callosum has been already discovered by Probst, Spiller, Mott and Tredgold, and by Rossi and Roussy. All these found it, as it was in my cases, limited to its middle half or middle third, excepting Spiller, in whose case it also extended into the anterior portion. Probst believes the fibres pass only from one to the other anterior central gyrus, and are thus strictly commissural; he has found the same changes in the brains of general paralytics in which there was recent degeneration of the cortico-spinal neurones.

The disease I have described in the grey matter of the spinal cord and in the homologous bulbar centres was so similar to, indeed practically identical with, that which is regarded as characteristic of the disease, that it requires no further reference. Though they were never affected in my cases, Probst, and Tooth and Turner found the lateral horns diseased; and Clarke's column has been involved in cases described by Oppenheim, Pal, Sarbó and others. Most authors have found the disease in the brain-stem limited to the nuclei of the motor cranial nerves, but those of the ocular nerves intact; Hoche, Rossi and Roussy, Schuster and Pal, however, describe degenerative changes in one or other of the ocular nerves, and Schuster saw degeneration of the descending root of the trigeminus. Kronthal alone records disease of the dorsal vagus nucleus. The accessory hypoglossal nucleus of Roller has been described as normal by Muratoff, Tooth and Turner, and by Haenel, but it was involved in cases examined by Oppenheim, and by Puscariu and Lambrior.

It may be finally pointed out that considering the widespread distribution of the disease throughout all segments of the nervous system, and especially the frequent degeneration of various afferent and associational fibres, as the dorsal longitudinal bundles, the spino-cerebellar tracts, and the ventro-lateral ground bundles of the cord, amyotrophic lateral sclerosis cannot be accurately spoken of as "essentially a disease of the motor system" (Spiller), or "a disease limited in its affection to the muscular system and to the motor systems of neurones" (Campbell); nor can cases in which changes are found in the non-motor tracts be excluded from the disease, as Oppenheim demands. This fact has special reference to the attempts that have been made by Spiller, Campbell, and Rossi and Roussy to define the motor area of the cerebral cortex, or the region from which the cortico-spinal tracts take origin, by the distribution of the cortical lesions in this disease; the premises on which these authors based their arguments were inaccurate, and consequently their conclusions cannot be maintained.

I am unable to add any facts that help to indicate the etiology of the disease. My observations certainly do not support Haenel's view that the degeneration of the nervous elements is secondary to vascular disease. The hypothesis that there is a defective *Anlage*, or an abiotrophic constitution of the elements that are affected in later life, might be maintained with some probability if amyotrophic lateral sclerosis were a disease of the upper and lower motor neurones only, but seems very improbable if the lesions be, as they actually are in many cases, much more widely and diffusely distributed throughout the nervous system. On the other hand, a toxic etiology, that might be postulate in these cases, does not seem very likely in those in which the degenerative changes are almost confined to the upper and lower motor neurones.

The relation of the disease of the nerve-fibres and of the cells from which they take origin opens up a large question which cannot be fully discussed here. The fact that in ordinary pathological work we employ entirely different methods to demonstrate disease of these two parts, and that in the case of the nerve fibres the usual methods demonstrate only the myeline sheath and not the axiscylinder which is the essential functional element, makes it extremely difficult to come to accurate conclusions.

Evidently the disease may be primary in the cells and the degeneration of the fibres secondary thereto; or the fibres may be the first affected and the cell changes mainly reactionary to the injury to their processes; or, finally, the cells and the fibres may be affected simultaneously. But we can discuss these possibilities only in relation to neurones of which we can easily identify both the fibres and the cells that give them origin; we may therefore select the lower motor neurones, those of the direct cerebellar tracts that have their cells in Clarke's column, and the cortico-spinal fibres that take origin from the Betz cells of the anterior central region of the cerebral cortex.

Almost all authors have noticed the disparity in the disease of the peripheral motor nerves or of the ventral spinal roots, and of the ventral cornual cells, for the latter may be enormously reduced in number or severely degenerated though the fibres to which they give origin may be in the majority intact or but very little affected. This has been described in my own cases. Kronthal, too, found the spinal nerves he examined almost intact, though there were scarcely any normal cells in the ventral horns, and consequently remarked "an die Degeneration der Vorderhornzellen braucht sich eine Degeneration der peripherischen Nerven nicht anzuschliessen." Hoche, Nonne and Probst describe much the same condition. In the case published by Tooth and Turner the ventral roots were perfectly healthy, though the ventral horns were much diseased; "we can offer no explanation of this apparent anomaly" these authors added. Philippe and Guillain, too, pointed out that there was no parallel between the affection of the fibres and that of their cells. This fact is the more remarkable as the muscles supplied

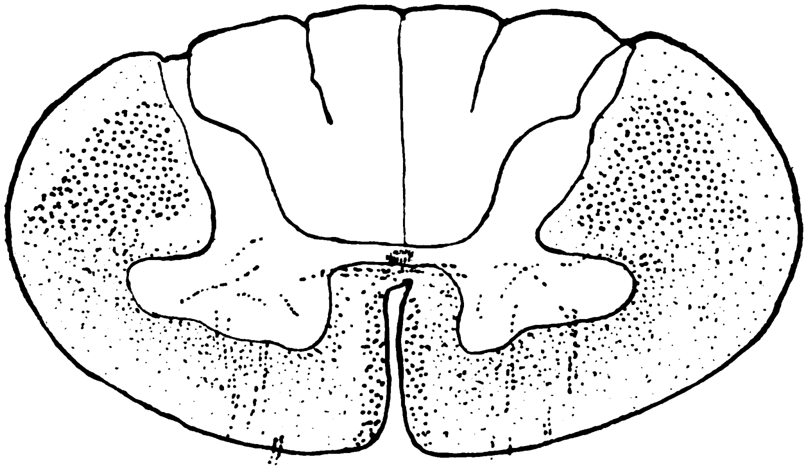

Fig 1

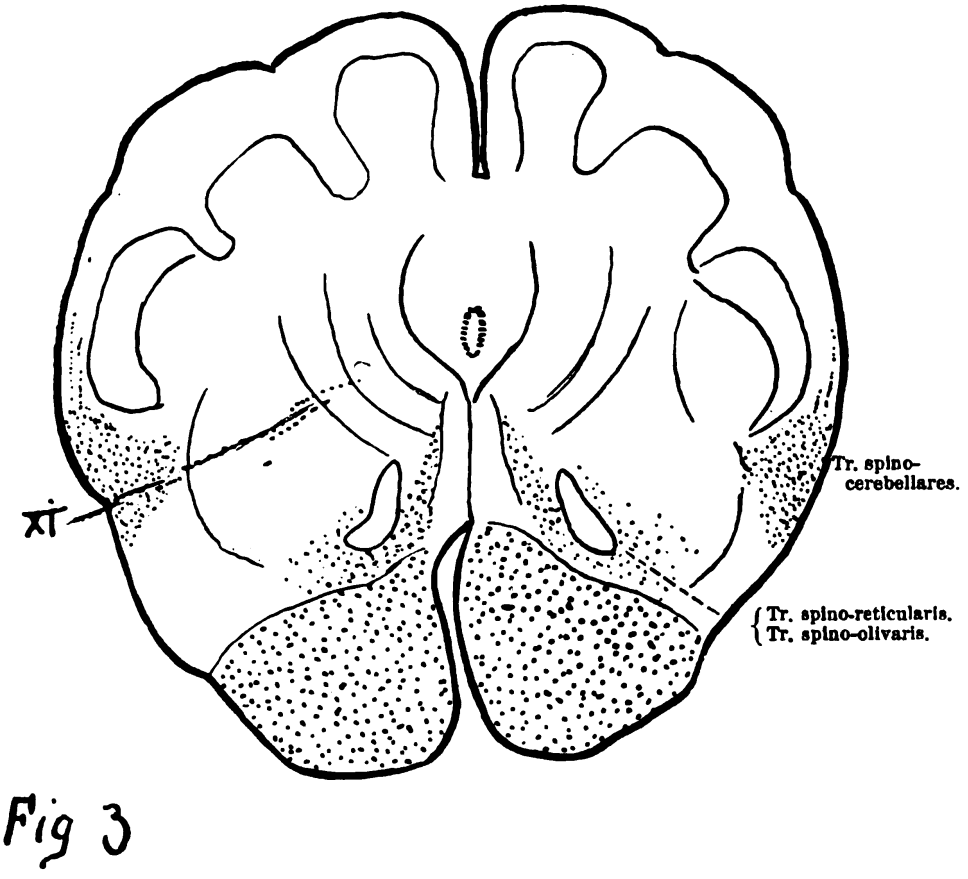

Fig 3

To illustrate Dr Holmes' Paper.

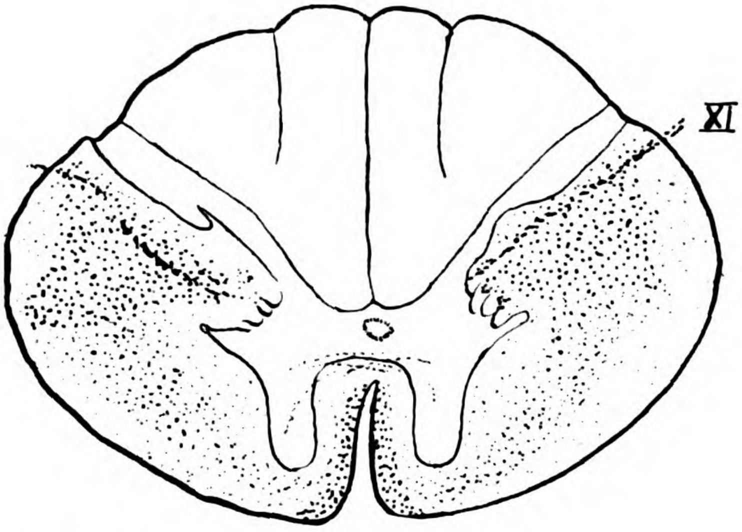

Fig. 2

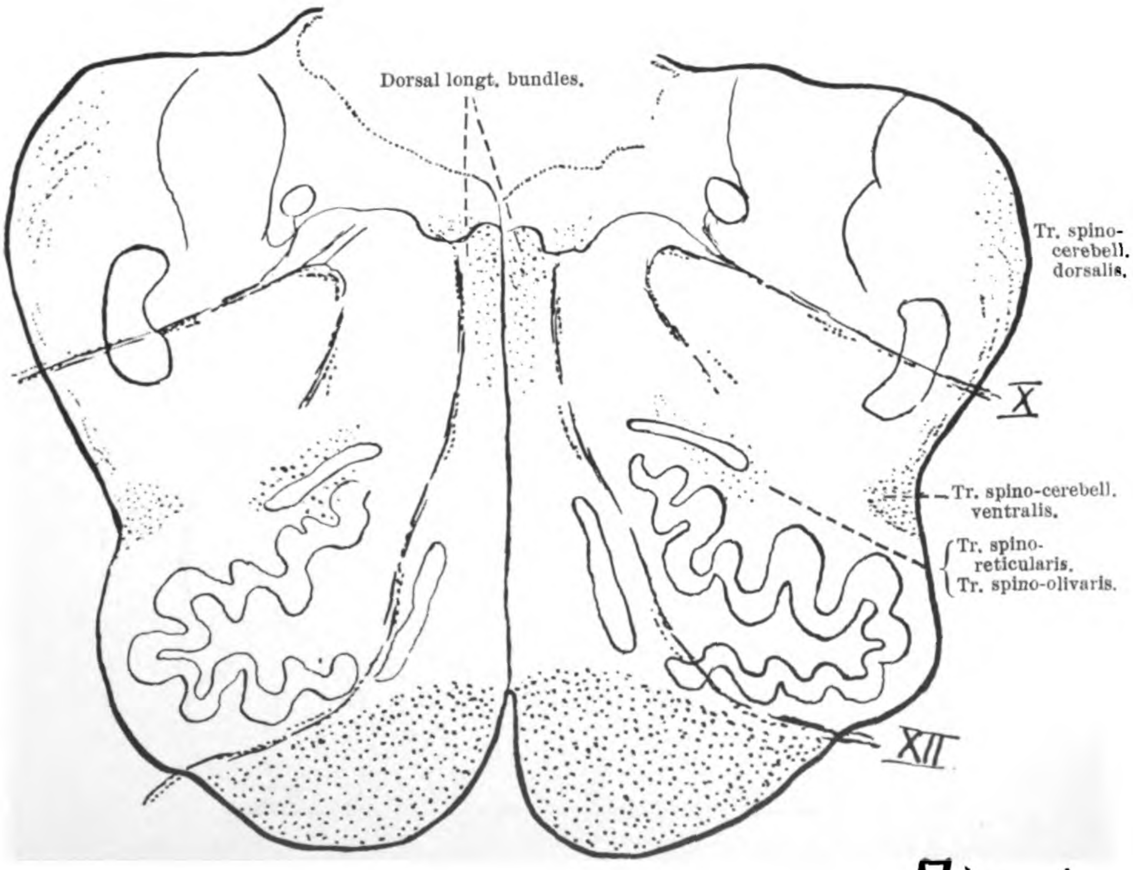

Fig. 4

To illustrate Dr Holmes' Paper.

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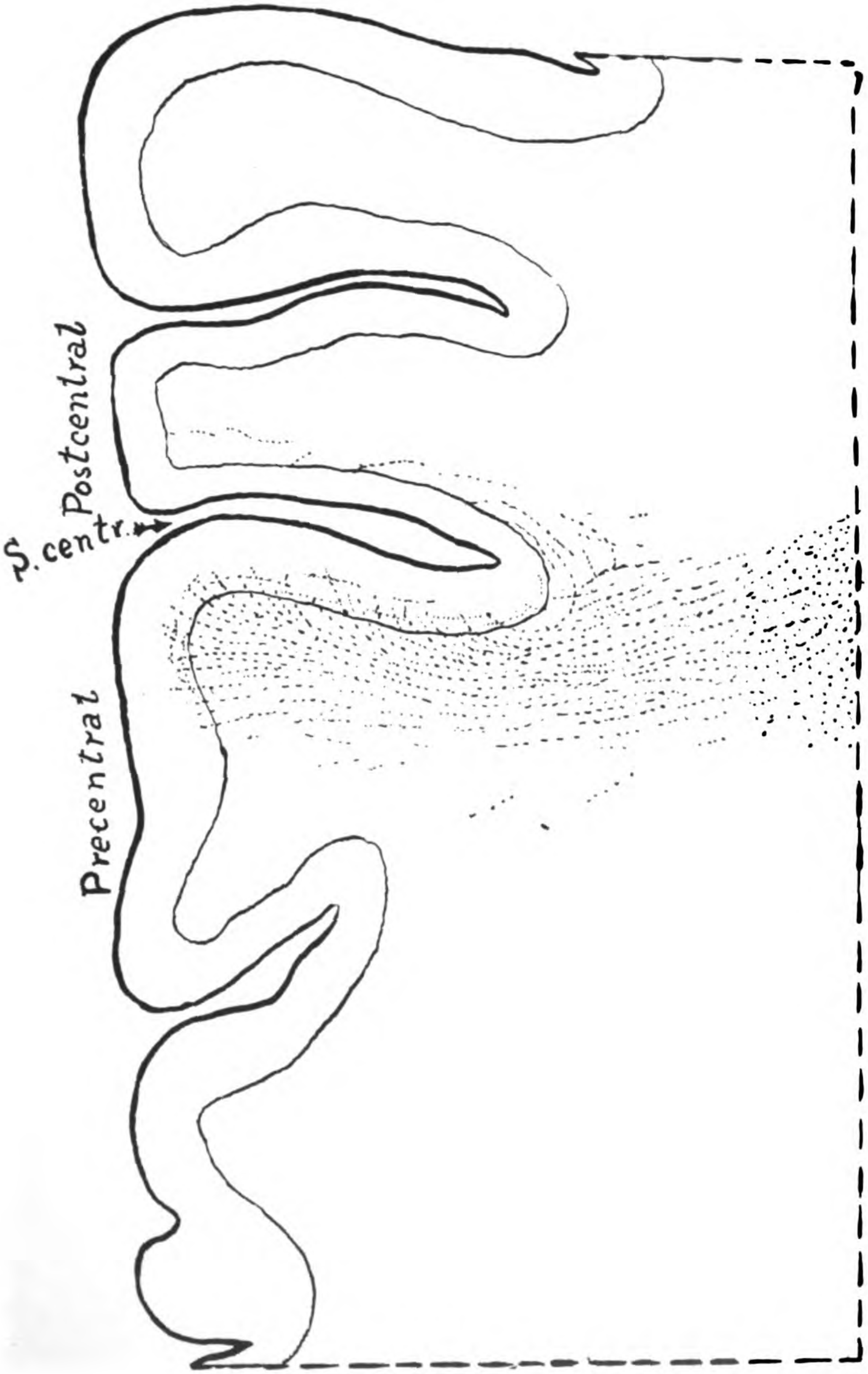

Fig 6

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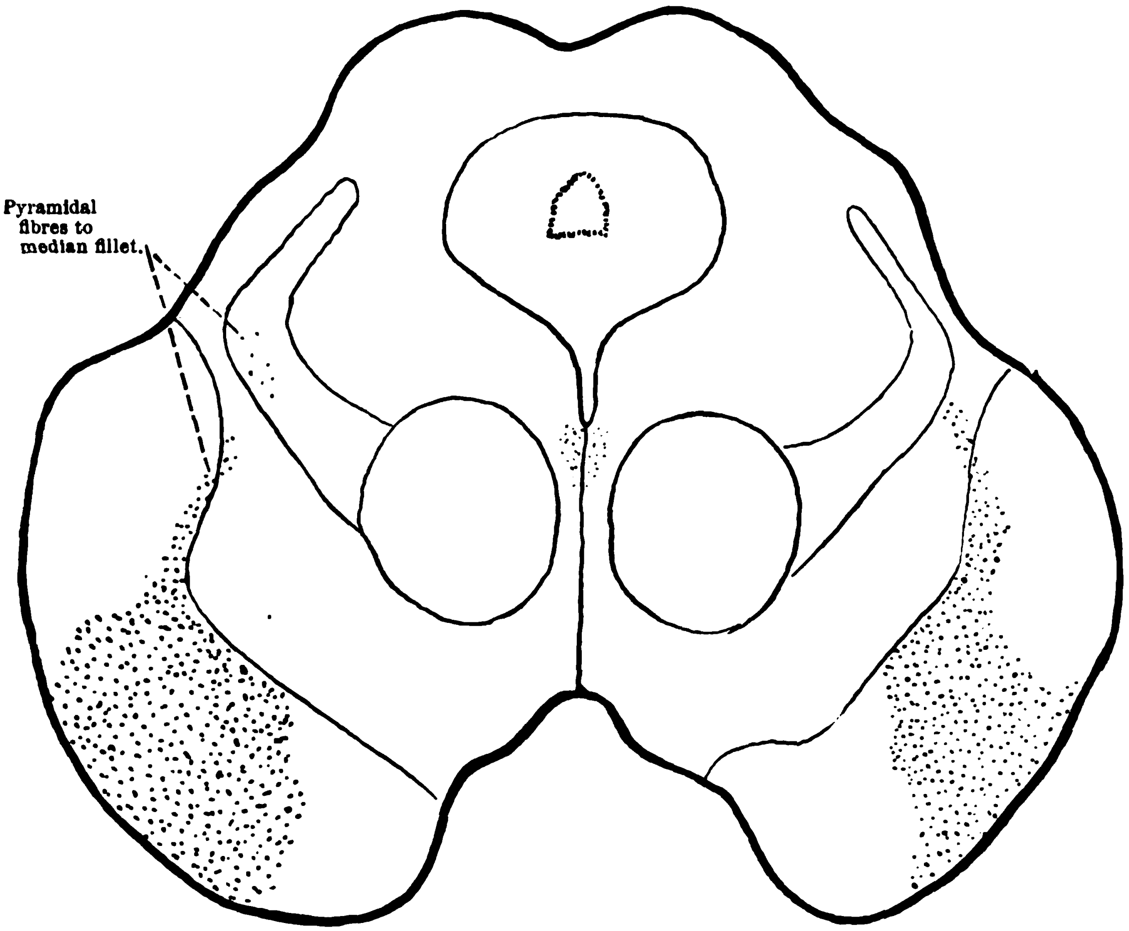

Fig. 5

To illustrate Dr Holmes' Paper.

by these nerves that show little or no change may be very severely degenerated.

One explanation that might be offered is that even the purely muscular nerves contain such a large proportion of afferent fibres, as Sherrington has shown, that the disappearance of even a considerable number of the motor fibres might escape observation, but this explanation cannot hold when the observation included the corresponding ventral roots, the fibres of which are only efferent. Another possible explanation is the fact that the products of degeneration are removed so rapidly from the peripheral nerves that Marchi's method may fail to reveal any evidence of the affection ; but this argument does not meet the fact that the medullary sheath stains may reveal little or no structural alterations in the nerves or in the ventral roots, as in several of my own cases. It may be noted that in these cases in which the ventral roots or peripheral nerves are scarcely affected, Marchi's method may show intense degenerative changes in the myelinated intra-medullary portions of the roots. There is usually a closer parallel between the disease of the motor cranial nerves and of their nuclei.

A systematic investigation of the axiscylinders, and not of the myeline sheaths alone, of all segments of the peripheral neurones is required before a satisfactory attempt can be made to explain this frequent disparity in the degeneration of the fibres and of their trophic cells. I can only add that in some of my own cases the axiscylinders of the ventral roots seemed no more affected than their myeline sheaths, in section stained with van Gieson's picro-fuchsin.

In the two purely intra-medullary systems I have chosen for reference the relative amount of degeneration in the cells and their fibres may be the reverse, for the cells of Clarke's column were apparently intact in cases in which a considerable proportion of the spino-cerebellar fibres, or at least their medullary sheaths, were degenerated. In my four cases of most acute course, too, the reduction in number, or even the disease of the Betz cells, was certainly not parallel to the affection of the cortico-spinal fibres. In these instances, therefore, the nerve fibres seem to be affected before, and more severely than, their trophic cells.

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Abstracts

ANATOMY.

A FEW CRITICISMS ON THE QUESTION OF NERVE ORIGIN.

(575) **(Kritische Bemerkungen zur Frage nach der Entstehung der Nerven.)** TH. SCHAEPPI, *Anat. Anz.*, Bd. 35, No. 4, p. 81.

IN this paper Schaeppi discusses the recent experimental work of Braus and Harrison on the development of nerve fibres. The latter observer has for some years carried out experiments, mainly on amphibian larval forms, which, according to him, substantiate the central or unicellular theory of nerve genesis. Braus, on the other hand, as a result of his experimental work, comes to the conclusion that in the case of the motor nerves the myotome and the central nervous system are in close anatomical continuity from the early developmental stages. He thus lends support to the well-known theory promulgated by Hensen and Apáthy.

Schaeppi devotes his paper almost entirely to an adverse criticism of Harrison's work, and maintains throughout a spirited discussion in favour of the Hensen-Apáthy theory. From the enthusiastic vein in which he writes, one is apt to conclude that he is somewhat biassed by the results of his own recent work on siphonophora, in which he has shown that the nervous system and the musculature are at all times in intimate association with one another.

After tabulating Harrison's main conclusions, Schaeppi afterwards endeavours to prove that these are all capable of being explained by the Hensen-Apáthy theory. Undoubtedly the whole question of neurogenesis resolves itself into the manner in which the appearances presented by the tissues, after treatment by various fixing media and staining reagents, are interpreted by investigators.

At the conclusion of his paper Schaeppi challenges the upholders of the unicellular theory of neurogenesis to demonstrate the growing end of a peripheral nerve. Interestingly enough, the writer of this abstract made an exactly similar challenge in a recent communication. This certainly exposes a vulnerable spot in the armour of the supporters of the unicellular theory.

JOHN CAMERON.

THE NUMBER OF THE PERIPHERAL BRANCHES OF THE (576) FACIAL NERVE. (Die Zahl der peripheren Facialäste.)

CARL HUDOVERNIG, *Neurolog. Centralbl.*, Sept. 1, 1909, p. 906.

THE purport of this paper is to indicate that it is incorrect to speak of the middle branch of the facial nerve. The not uncommon erroneous reference in clinical text-books to the three branches of the facial nerve no doubt owes its origin to the circumstance that three distinct electrical motor points are demonstrable. All the recent text-books on anatomy, however, agree in describing the facial nerve as dividing into two branches after it emerges from the stylomastoid foramen. Further, Marinesco and van Gehuchten have pointed out in animals, and the author and Parhon in man, that the facial nucleus consists of two portions—a dorsal corresponding to the upper, a ventral to the lower face. This division of the facial nerve into two portions is in agreement with the clinical facts.

EDWIN BRAMWELL.

ON THE INTIMATE CONNECTIONS BETWEEN THE NEUROGLIA AND THE CELLS AND NERVE FIBRES. (577) (Encore sur les rapports les plus intimes entre la névroglie et les cellules et les fibres nerveuses.)

G. PALADINO, *Arch. ital. de Biol.*, T. li., F. 2, 1909, p. 206.

THE author, who has studied specially the electric cells of the torpedo, hardening by the methods of van Gehuchten, Zenker, and Flemming, and staining by rubine acid and a mixture of Biebrich's scarlet and hæmatoxylin, finds (1) that the neuroglia is intimately connected both with the nerve cells and the nerve fibres, so that the neuroglia forms a pericellular and an intracellular network continuous with the former; (2) that it is continued into the myeline of the nerve fibres and constitutes their framework. He thinks that the neuroglia penetrates into the vacuoles of diseased nerve cells, and may give rise within these to cell groups which are continuous both with the interstitial and the intracellular neuroglial network. Along the intracellular neuroglial network there are spaces forming a system of canals which serve for the distribution of the nutritive juice into the nerve cells.

The author is also of opinion that the collaterals seen in silver preparations do not exist. The paper is illustrated by six figures.

ALEXANDER BRUCE.

ARE THERE PREFORMED LYMPH SPACES? (Giebt es präformierte pericelluläre Lymphräume?) L. MERZBACHER, *Neurolog. Centralbl.*, Sept. 16, 1909, p. 975.

(578)

A CASE of diffuse carcinoma of the brain examined by the author presented a distribution of the pathological process very similar to that observed by Obersteiner in his injection experiments. Merzbacher examined many preparations, in a few of which it was possible to say with certainty that cells grouped around the ganglion cells of the cortex were actually tumour cells. The relationship of the tumour cells to the ganglion cells was such that an artefact could be with certainty excluded. The altered shape of the tumour cells, their relationship to the ganglion cells on the one hand and to the surrounding glia cells on the other, and the circumstance that they were situated at a considerable distance from the blood vessels, forced the author to the conclusion that they were actually contained in lymph spaces surrounding the nerve cells. O. Fischer has described similar appearances (*Jahrbücher f. Psychiatrie*, xxv., 1905, p. 125). Merzbacher admits with Nissl that apparent pericellular spaces are only too often artefacts, but differs from him in that he believes in the existence of pericellular lymph spaces.

EDWIN BRAMWELL.

ON THE STRUCTURE AND FUNCTIONAL RELATIONS OF THE OPTIC THALAMUS. ERNEST SACHS, *Brain*, Aug. 1909, p. 95.

(579)

THIS fine piece of work commences with a historical resumé of the various views held regarding the physiology and anatomy of the thalamus and its connections. Then follows a detailed account of the experimental work which was done on cats and monkeys. The experiments fall into three groups:—

1. Localized lesions of the cortex cerebri (by means of nitric acid), and subsequent anatomical investigation of the cortici-thalamic fibres.
2. Localized lesions of the thalamus, using Clarke's stereotaxic instrument to produce the minute electrolytic lesions, subsequently investigating the thalami-cortical and other tracts of fibres associated with the lesion.

3. Phenomena observed on electrical excitation of the thalamus and its neighbourhood, carried out millimetre by millimetre with bipolar electrodes.

Numerous diagrams and photographs illustrate the paper, and there is a large bibliography. The results are summarised as follows:—(1) The hypothalamus is essentially distinct from the thalamus. (2) The hypothalamus is closely connected with the globus pallidus. (3) The thalamus must be regarded as consisting of an inner and outer division, of which the inner includes the nucleus anterior and nucleus medius. (4) The inner division is in association with the nucleus caudatus and with the rhinencephalon. (5) The outer division is the end station of the fillet and of the superior cerebellar peduncle. It is closely connected with the Rolandic region of the pallium. (6) From the results of excitation experiments, as well as the anatomical facts deduced from very localized lesions, the inner and outer divisions of the thalamus appear to be in the main relatively independent organisations. (7) The precentral especially, and postcentral pallium (*macacus rhesus*), and the excito-motor area in the cat are connected by pyramidal fibres and collaterals with the middle and ventral thirds of the nucleus lateralis. (8) The temporal pallium (cat) is connected by projection fibres, and collaterals with the postero-ventral region of the nucleus lateralis, the corpus geniculatum mediale and the pons varolii. (9) The thalami-cortical fibres connecting the nucleus lateralis with the pallium are arranged dorso-ventrally, so that those for the representation of the face are ventral to those for the limbs. (10) The general direction of the large majority of axones, whether originating in a thalamic nucleus or passing through the thalamus, is outwards and dorsalwards. (11) The precentral pallial area for the representation of the movements of the limbs is not connected by pallio-tectal fibres with the colliculi. J. H. HARVEY PIRIE.

PHYSIOLOGY.

NOTE ON THE MOVEMENTS OF THE TONGUE FROM STIMULATION OF THE TWELFTH NUCLEUS, ROOT, AND NERVE.

(580) A. T. MUSSEN, *Brain*, Aug. 1909, p. 206.

SIMILAR results were obtained in the cat and monkey by stimulating the twelfth nucleus, root, and nerve, first with the tongue in a normal state and then after dividing it into two halves. The movements obtained were—

(1) Protrusion of the half stimulated to the opposite side as far as the canine teeth.

(2) Protrusion straight.
(3) Protrusion from the same side.
(4) Protrusion into the cheek of the same side.
(5) Touching the teeth and gums of the upper and lower jaw on the same side with the tip of the tongue, and as far as the canine teeth, upper and lower, on the opposite side.
(6) Curling upwards and backwards of the tip of the tongue to the roof of the mouth on the same side.

In fact, the only movements that the stimulated half could not perform were: protrusion from the opposite angle of the mouth, protrusion into the opposite cheek, and inability to touch the molar teeth and the gums on the opposite side.

Paralysis of one half of the tongue from affection of nucleus, root, or nerve should therefore show: inability to touch the teeth, the gums, or to protrude the tongue into the cheek of the paralysed side, while there is perfect freedom of movement to the sound side. J. H. HARVEY PIRIE.

PHYSIOLOGICAL AND HISTOLOGICAL OBSERVATIONS ON (581) MUSCLES CHIEFLY IN RELATION TO THE ACTION OF GUANIDINE.

M. CAMIS, *Journ. Physiol.*, Aug. 26, 1909, p. 73.

THE action of guanidine in producing spontaneous twitching of muscle has assumed importance in relation to the theory of Langley that chemical substances do not act on the terminal branches of nerve-endings, but combine with different side-chain radicles of the contractile molecule. As a contribution to the controversy which has arisen regarding this action of guanidine, the author's experiments claim to elicit the following conclusions :—

1. Guanidine acts on frog muscles by producing spontaneous twitching and by affecting their contractility.
2. The production of spontaneous twitches is an inconstant phenomenon, which can be seen also on denervated muscles.
3. The action on contractility is the same in normal muscles and in muscle whose nerve-endings are completely degenerated.
4. Guanidine acts by combining with two different substances of the muscle, one of which is responsible for the twitches, the other for the changes in contractility.

The following passage seems to require some comment :—" The twitching property of the isolated muscle when in the presence of guanidine is, in the frog muscle, of such a delicate nature that it can be lost by slight change of condition, such as confinement of the animal in the laboratory. It seems that in these abnormal conditions of life some substance of the muscle fibre disappears, but frogs kept even for a long time in the laboratory present spontaneous twitches in their skeletal muscles if, after being pithed, they are injected with a guanidine solution."

If, when the animal is kept in confinement, this substance does not disappear from the muscles of the pithed frog, confinement alone cannot explain its absence in the muscles when isolated.

J. A. GUNN.

PATHOLOGY.

THE MACROSCOPIC EXAMINATION OF THE BRAIN IN MY (582) CASE OF LEFT-SIDED MOTOR APRAXIA. (Der makroskopische Hirnbefund in meinem Falle von linksseitiger motorischer Apraxie.) KURT GOLDSTEIN, *Neurolog. Centralbl.*, Sept. 1, 1909, p. 898.

THE clinical features of this case were reported in full in the *Journ. f. Psychol. u. Neurol.*, xi., 1908. The patient died a year later of intercurrent disease. In the course of this period the author examined the patient on several occasions and found no essential improvement in the apraxia.

At the post-mortem an elongated area of softening was found on the mesial surface of the right hemisphere, commencing in front of the anterior end of the corpus callosum and extending backwards above the latter to the posterior end of the gyrus fornicatus. The white matter and part of the cortex of the paracentral lobule were destroyed, also the gyrus fornicatus, both white matter and cortex, the most posterior portion of the mesial cortex of the first frontal convolution, as well as a portion of its white matter, and, lastly, the corpus callosum in its whole extent.

EDWIN BRAMWELL.

REMNANTS OF HYPOPHYSIS IN THE ROOF OF THE PHARYNX (583) AND ELSEWHERE, AND THEIR PATHOLOGICAL SIGNIFICANCE. (Die Rachendachhypophyse, andere Hypophysengangreste und deren Bedeutung für die Pathologie.) HALBERFELD, *Ziegler's Beiträge*, Bd. 46, H. 1, S. 133 (100 pp. with one double plate).

HYPOPHYSIS-LIKE structures have been described as occurring in the roof of the pharynx in new-born infants. Halberfeld therefore examined this locality in over fifty cases, of ages varying from that of the fœtus up to ninety years, and, in a certain proportion of these, remnants of hypophyseal tissue were found along the line of the obliterated cranio-pharyngeal canal. Tumour-growth may occasionally supervene in these remnants or "Resten" (*cf.* those arising from the thyro-glossal duct.)

W. E. CARNEGIE DICKSON.

ON THE CHANGES OF THE HYPOPHYSIS IN PREGNANCY.

(584) **(Ueber die Schwangerschaftsveränderung der Hypophyse.)** ERDHEIM und STUMME, *Ziegler's Beiträge*, Bd. 46, H. 1, S. 1, 1909 (132 pp., with four double plates).

THIS is a long article, which deals first with the normal histology of the hypophysis in males and nulliparous females (there being no special difference between these), the glandular portion of the gland showing the three varieties of cell usually recognised, *i.e.* the non-granular Hauptzellen, and the eosinophil and basophil granular cells.

The alterations observed in primiparous and multiparous females are next described and discussed, and there are appendices dealing with adenoma and hernia of the gland.

The paper is of such length, and is so replete with detail, that it cannot profitably be abstracted briefly, and those interested in the subject should consult the original.

W. E. CARNEGIE DICKSON.

ON PLASMA CELLS AND THE REACTIVE PHENOMENA IN A CASE OF CYSTICERCUS IN THE BRAIN.

(585) **(Sulle plasmacellule e sui fenomeni reattivi nella cisticercosi cerebrale.)** PAPADIA, *Riv. di Patol. nerv. e ment.*, Vol. xiv., fasc. 8, 1909.

THE author has described the structures seen in the adventitial wall of cysts of cysticercus in the brain, and also the changes in the nervous tissues near them. The adventitial wall showed three layers: (1) a layer of loose connective tissue; (2) a layer of dense connective tissue; (3) a layer of cells, chiefly plasma cells.

The first layer contained few fine fibres forming a coarse network; it was rich in cellular elements, many of which exhibited regressive changes. There were also a few lymphocytes and a considerable number of giant cells. The second layer consisted in many bundles of fibres of connective tissue; it contained few cellular elements. The third layer contained a large number of plasma cells. Those nearest the preceding layer were elongated horizontally, and separated by fine bundles of connective tissue. Further from the second layer they assumed a fusiform shape; lastly, typical plasma cells were found. Many of these cells showed signs of involution; some were undergoing atrophy, some showed signs of hyaline change, and others vacuolation. Mitosis was frequent amongst the fusiform cells. In this layer, and especially near the surrounding nerve tissues, there were numerous vessels whose walls were infiltrated with plasma cells. Lymphocytes were also seen; these were not scattered amongst the plasma cells, but were collected into separate masses.

With regard to the origin of the plasma cells, the author discussed the three theories which have been advanced—viz., the hæmatogenous, the histogenous, and also the theory which derives these cells from special germinal elements deposited in the connective tissues, and especially in that around vessels; these are supposed to give rise to plasma cells under the influence of pathological stimuli. No intermediate forms between the lymphocytes and the plasma cells were found in these tissues. On the other hand, the author stated that he was able to trace the derivation of these cells from the fusiform cells lying outside the dense fibrous layer, amongst which mitotic division was frequent. R. G. ROWS.

THE PRESENCE OF PLASMA CELLS IN THE SPINAL CORD (586) IN GENERAL PARALYSIS.

(Plasmazellenbefunde im Rückenmark bei progressiver Paralyse.) G. OPPENHEIM (of Freiburg), *Arch. f. Psych.*, Bd. 44, p. 938.

THE author examined the cord in fourteen cases of general paralysis not specially selected, in order to investigate the presence of inflammatory changes as indicated by an adventitial plasma cell infiltrate corresponding to that found in the cerebral cortex. In one case there was no evidence of fibre degeneration. In all cases there was a plasma cell infiltrate of the pia and of the adventitial coat of the vessels of the cord. The nature of the infiltrate is well shown on a coloured plate. C. MACFIE CAMPBELL.

PATHOLOGICAL ANATOMICAL CHANGES IN THE CENTRAL (587) AND PERIPHERAL NERVOUS SYSTEM IN TOBACCO-SMOKE POISONING.

(Pathologisch-anatomische Veränderungen im centralen und peripherischen Nervensystem bei Tabakrauchvergiftung.) S. WLADYCZKO, *Neurolog. Centralbl.*, Sept. 1, 1909, p. 910.

AFTER referring to the observations of previous observers, the author describes his own experiments upon twenty-seven rabbits and four white rats. The main conclusion he arrives at is that the daily long-continued inhalation of tobacco smoke produces destructive appearances in the central and peripheral nervous system of rabbits; the same appearances, though less pronounced in degree, resulting if an extract of tobacco smoke is introduced into the organism. The original paper must be consulted for details as to the technique of the experiments and the changes found. EDWIN BRAMWELL.

ALTERATIONS OF THE ANTERIOR ROOTS IN TABES. André
(588) Thomas, *Rev. Neurol.*, June 15, 1909, p. 683.

Using Cajal's method, Thomas has found marked parenchymatous changes in the axis-cylinders of the anterior roots; hypertrophied axons and axons dividing up into fine fibrils, each of these bundles of fibrils being contained within one myelin sheath. The alterations were found in the anterior roots outside the cord; in their passage through the anterior columns they were normal. The appearances are those of regenerating axis-cylinders. In one case of tabes the anterior roots presented the same feature of hypertrophied sheaths to the individual axons as Dejerine and Thomas have found in hypertrophic interstitial neuritis.

S. A. K. Wilson.

ON THE PATHOLOGICAL ANATOMY OF PARALYSIS AGITANS.
(589) **(Zur pathologischen Anatomie der Paralysis agitans.)** R. Moriyasu, *Arch. f. Psych.*, Bd. 44, p. 789.

The author reviews the results of other investigators, and reports in detail the clinical history and anatomical findings in one personal case, and the anatomical findings in the cerebellum of two cases previously published in this *Archiv.* He considers the muscular vacuolisation and atrophy as merely part of the senile process and not relevant to the particular disorder. The disease has no special seat in any one tissue, but is the complex result of changes in the brain, cerebellum, and spinal cord. C. Macfie Campbell.

THE PATHOLOGY OF GENERAL PARALYSIS OF THE INSANE, WITH SPECIAL REFERENCE TO THE ACTION OF DIPHTHEROID ORGANISMS. Flashman and Latham,
(590) *Trans. Austral. Med. Cong.*, Vol. iii., 1909.

Reference is first of all made to the much-discussed question of syphilis as being the cause of general paralysis; then the work done by Ford Robertson and his colleagues is shortly discussed. In 1903 Ford Robertson, in association with Shennan, fed rats on the diphtheroid bacillus, with the result that these animals exhibited signs of paresis, and after death changes similar to those seen in general paralytics were found in the organs.

Flashman and Latham have carried out a series of experiments on similar lines to those of Ford Robertson and Shennan. They injected into fifteen rats a diphtheroid organism obtained from a general paralytic. The post-mortem examination of the rat which survived longest was very interesting and exhibited well-marked changes in the brain and other organs. In the cerebral cortex were found small areas occupied by newly-formed neuroglia cells, while the nerve cells in these situations were destroyed. In the medulla, pons and cerebellum the increase consisted of large numbers of more or less isolated spider cells.

The pia-arachnoid over almost all parts of the brain was much thickened and infiltrated with lymphocytes. There was a definite increase in the number of layers of ependymal cells lining the ventricles, together with an increase in patches of the neighbouring neuroglia.

The vascular changes showed in many places beautifully marked typical peri-arteritis. A conspicuous feature of this brain was the great increase in the number of capillary loops seen in sections, especially of the cerebellum. This was very noticeable when a comparison with the normal brain was made.

As far as the nerve elements were concerned there was a general diminution in the number of the neurones throughout the cortex, and the absolute destruction of them *en masse* in those situations occupied by the neuroglial patches already referred to.

In the lungs broncho-pneumonic patches were common.

Similar definite changes were found in the tissues of nearly all the other rats examined.

The results were controlled by the observation of a very large number of sections of the brains of normal rats.

It is thus shown that diphtheroid organisms administered over a long period can produce the cerebral changes which are typical of general paralysis. R. DODS BROWN.

INVESTIGATIONS ON THE AMOUNT OF PHOSPHORUS IN (591) THE CEREBRO-SPINAL FLUID UNDER PATHOLOGICAL CONDITIONS. (Untersuchungen über den Phosphorsäuregehalt der Spinalflüssigkeit unter pathologischen Verhältnissen.)

F. APELT and O. SCHUMM, *Arch. f. Psych.*, Bd. 44, p. 845.

SCHUMM gives in detail the technique employed in the estimation of the amount of phosphorus (estimated in terms of P_2O_5) in the cerebro-spinal fluid. Apelt gives the clinical data. The estimation can be made with 5-10 c.cm. of fluid. In the different disorders the P_2O_5 content varies considerably; in idiopathic epilepsy the average percentage was 0·0029 gr., in general paralysis 0·007 gr. Comparative estimations in healthy individuals are not as yet available. The greatest amount of phosphoric acid was found in a case of uræmia; it would therefore be premature to correlate the high percentage in general paralysis with destruction of the nervous tissue. Twenty-four hours post-mortem the amount of phosphoric acid in the fluid increased from three- to ten-fold. In contrast with Donath, the authors found in different cases of the same disorder a striking similarity in the amount of phosphorus.

C. MACFIE CAMPBELL.

OSSEOUS CHANGES IN MYOPATHY. (Les altérations osseuses (592) au cours de la myopathie.) MERLE and RAULOT-LAPOINTE, *Nouv. Icon. de la Salpêtrière*, May-June 1909, p. 237.

As a result of the radiographic examination of a number of cases, the authors conclude that the bones become thinner and smaller, and undergo modifications in form, while at the same time they become less dense and therefore more transparent. The osseous tissue of the epiphyses becomes homogeneous, the trabeculæ being no longer distinct; the diaphyses become like transparent tubes of thin glass. The contours of the bones are smooth and rounded, bony projections for muscular insertions being nowhere prominent. S. A. K. WILSON.

CLINICAL NEUROLOGY.

A FEW STATISTICS REGARDING THE DISEASES OF THE (593) NERVOUS SYSTEM IN THE RUSSIAN ARMY DURING THE RUSSIAN AND JAPANESE WAR. L. MINOR, *Neurolog. Centralbl.*, Aug. 16, 1909, p. 854.

THESE observations are based upon 26,700 sick and wounded sent to Moscow for treatment during the war. Among these there were 2309 cases of injury to, or disease of, the nervous system, for statistics regarding the relative frequency of which the reader is referred to the original paper. EDWIN BRAMWELL.

MYOTONIA ATROPHICA. F. E. BATTEN and H. P. GIBB, *Brain*, (594) Aug. 1909, p. 187.

THE essential feature of this condition is the association of muscular atrophy with a slow relaxation of muscles after voluntary contraction. The authors put five cases on record, and they have discovered twenty-nine others, described under various names, but that first used by Rossolimo is taken as describing briefly the salient features. An analysis of the thirty-four cases gives the following as a type:—(1) Familial character. In several cases it has occurred in more than one member of a family, but direct heredity has not been observed. (2) Etiology. It arises without apparent cause. (3) Sex. The disease is much commoner among males. (4) Age of onset. The symptoms make their appearance in early adult life; in the majority of cases between the ages of twenty and thirty. (5) Distribution of the atrophy. Atrophy of the facial musculature is almost constant, the features resembling those seen in the Landouzy-Dejerine type of myopathy. The masseters and temporals are involved in 50 per cent. of the cases. The sternomastoids are frequently affected, the forearm musculature almost always, other muscles in the upper extremity only occasionally. The trunk muscles always escape. In the lower limbs the vasti and the dorsiflexors of the feet are the muscles commonly involved. (6) The myotonia. This is shown by far the more commonly in a difficulty in relaxing the grasp than in any other voluntary movement, and the more forcible the contraction the slower the relaxation. It may be present, though to a less degree, in other movements. It bears no relation to the atrophy, so far as voluntary movements are concerned. J. H. HARVEY PIRIE.

NASAL DISEASES AND THE SYMPATHETIC. (Nasenleiden und Sympathicus.)

(595) MAX. BRESGEN, *Beiträge zur Anat. des Ohres., etc.*, Aug. 31, p. 125.

MAX BUCH has shown that the sympathetic is insensitive only in health; it becomes very sensitive in diseased conditions. Now the nasal mucous membrane has a very rich supply of branches from the sympathetic; these can become highly sensitive in every form of rhinitis; it is therefore not to be wondered at that so-called nasal reflexes may be produced from even distant parts of the body. These reflexes are not due to irritation of special areas in the nose, and are not to be cured by cauterizing these areas. One must consider the nasal mucous membrane as a whole, there is then some prospect of obtaining a cure. W. G. PORTER.

MALIGNANT GLIOMA OF THE SYMPATHETIC NERVOUS SYSTEM. (Über das maligne Gliom des sympathischen Nervensystems.)

(596) PAUL SCHILDER, *Frankfurter Ztschrft. f. Path.*, Bd. 3, Hft. 2, S. 317.

ONLY some half-dozen cases of this form of tumour have been hitherto described, all of them from infants or young children, the tumour being in the substance of the supra-renal gland (in the region of the coccygeal gland in one instance), and its relationship to the sympathetic somewhat conjectural. But this case of the author's points much more definitely to a connection with the sympathetic nervous system. The tumour was found in a seven-day old infant dying of head injuries received at birth. It lay lateral to the body of the second lumbar vertebra, of spindle shape, 13 × 7 × 5 mm. in size, bluish-red in colour for the main part, and with the sympathetic cord dipping into it at both poles. The supra-renals were normal. The tumour was essentially composed of small closely-packed cells, between which was a network of fibrils with all the characters of glia fibrils. It lay chiefly along the inner side of the sympathetic cord, but at places lines of the tumour cells had infiltrated the perineurium and passed between the nerve fibres and along the stroma of the ganglia on the cord. Another sign of its malignant character was the frequent presence of tumour-thrombi in the blood vessels. The essential cells of the tumour had the appearance of closely-packed nuclei, 6-8 μ in diam., very rich in chromatin, and with practically no surrounding protoplasm. Between them a fine network of glia fibrils. A characteristic feature, especially in the parts actually infiltrating the sympathetic and also in the tumour-thrombi, was the rosettes or balls of glia—spherical masses of thickly-matted glia fibres surrounded by a ring of tumour cells (without having, however, the regular palisade arrangement of the retinal neuro-epithelioma). A tendency to hæmorrhages was another characteristic feature. The tumour was rich in thin-walled vessels; beyond these there was no other stroma or connective tissues.

J. H. HARVEY PIRIE.

PARALYSIS OF THE ULNAR NERVE FOLLOWING TYPHOID (597) FEVER. (Erkrankung des N. ulnaris nach Typhus abdominalis.)

W. LASAREW, *Monatsschr. f. Psych. u. Neurol.*, xxv., 1909, p. 327.

A RECORD of five cases observed in an epidemic of typhoid fever at Kiev remarkable for the large number of nervous complications. The ages of the patients ranged from seventeen to thirty-six years. The sexes were not stated. In all but one case the initial attack had been severe. In all, the complication occurred in convalescence. The onset was characterised by sensory symptoms. In none was the paralysis complete. In only one was there muscular atrophy, the muscles of the hypothenar eminence being involved. The electrical reactions were not affected. Considerable improvement occurred in the three cases in which information as to their progress after discharge from hospital could be obtained. Lasarew considers that the palsy in most cases is due to compression of the ulnar nerve between the coronoid process and the internal condyle. In favour of this supposition is the fact that the paralysis usually arises in convalescence when the patient substitutes the lateral for the supine decubitus. Possibly in some cases there is a typhoid mononeuritis due to penetration of the bacilli into the nerve sheath.

J. D. ROLLESTON.

RARE CASES OF INFECTIVE MONONEURITIS. 1. UNILATERAL (598) HYPOGLOSSAL PARALYSIS IN STAPHYLOCOCCIC ANGINA. 2. PERONEAL PARALYSIS AFTER TETANUS.

(Zur Kenntniss seltener infektiöser Mononeuritiden. 1. Einseitige Hypoglossuslähmung bei Angina staphylococcica. 2. Peroneuslähmung bei Tetanus traumaticus.) P. L. SCHLIPPE, *Deut. med. Woch.*, 1909, p. 1219.

1. A WOMAN, aged 24, who had had several previous attacks, was taken ill with follicular tonsillitis on July 24. Repeated bacteriological examination showed staphylococci only. Paralysis of the left half of the tongue set in rapidly on the fourth day, and eight days later the reaction of degeneration was obtained. Within fourteen days of the onset of the angina there was visible and palpable atrophy of the affected portion of the tongue, which showed a much thicker coating than the sound side. After eight weeks' treatment with the galvanic current there was considerable improvement, and by October the tongue had regained its normal appearance. The palsy in this case was probably not due to mechanical compression of the nerve, because then inflammatory swelling was not extreme, especially on the left side. Schlippe considers it is more likely that the faucial inflammation was propagated along the nerve fibres which were invaded either by the causal organisms or by their toxines.

2. A gardener's boy, aged 19, was admitted to hospital in August with tetanus. Recovery followed large doses of antitoxin, but in the fifth week complete paralysis of the left peroneal nerve developed. Treatment consisted in galvanisation of the affected muscles. On his discharge from hospital in December the peroneal nerve showed a typical reaction of degeneration. By the following January the paralysis had completely disappeared.

J. D. ROLLESTON.

CHRONIC ANTERIOR POLIOMYELITIS OF THE CERVICAL (599) CORD, WITH SYMMETRICAL BILATERAL INVOLVEMENT OF THE BULBAR AND SPINAL CENTRES OF THE ELEVENTH CRANIAL NERVES.

(Poliomyélite antérieure chronique de la moelle cervicale ; atteinte bilatérale et symétrique des noyaux bulbaires et médullaires de la XI^e paire.) BERTOLOTTI, *Nouv. Icon. de la Salp.*, Jan.-Feb. 1909, p. 41.

A YOUNG woman, aged 25, one day when carrying a heavy load on her left shoulder suddenly became conscious of a feeling of great weakness in both shoulders, and found she had difficulty in keeping her head from falling forward. Two or three days later she noticed that the timbre of her voice was changing, becoming husky and weak. When she came under observation, two years later, there was seen to be complete paralysis and atrophy of the deep muscles of the neck, great weakness and atrophy of the whole of the trapezius, the pectorals, the serrati magni and part of the deltoids, and slight wasting of the biceps and triceps. In addition, the sternomastoids were both atrophic, while the tongue and all the muscles supplied by the twelfth pair were normal. The palate was paresed, the superior constrictors of the pharynx paralysed: further, the laryngeal adductors (arytenoidei and cricoarytenoidei) were paralysed on both sides.

With no sensory change whatever, it was obvious that a pathological process had singled out all the cervical motor nuclei (as low as the fourth or fifth segment), and in addition the column of cells occupying the postero-external segment of the anterior horns, which descends to the fifth segment, and constitutes the spinal root of the accessory nerve. The case is of great interest in that it corroborates the view which relegates to the internal branch of the eleventh nerve the supply of the palate (in part) and the superior pharyngeal constrictor (as was found in apes by Beevor and Horsley), and further suggests that paralysis of phonation is a laryngeal syndrome also referable to an affection of the eleventh pair. It must be understood that the authors are discussing solely the question of nuclear disease of the eleventh, for they diagnose their case as one of poliomyelitis.

S. A. K. Wilson.

PERINEAL HERPES IN PNEUMONIA. J. Phillips, *Cleveland*
(600) *Med. Journ.*, 1909, p. 589.

A girl, aged 8 months, was admitted to hospital with right apical pneumonia on the third day of disease. Three days later herpes appeared on the perineum to the left of the middle line, partially encircling the anus and extending forwards to the posterior part of the labia majora. The area affected corresponded to a lesion of the posterior root ganglia of the fourth and fifth sacral nerves. The child made a good recovery. J. D. Rolleston.

TRAUMATIC HEMISECTION OF THE CORD: SYNDROME OF
(601) **BROWN-SÉQUARD.** Ranzier and Rimbaud, *Rev. Neurol.*, July 30, 1909, p. 887.

Among the many characteristic symptoms presented by this case, one or two variations from the classical type may be noted. The loss of the muscular sense was bilateral in the lower extremities.

Deep sensibility was lost on the same side as cutaneous sensibility. For thirty hours after the wound cerebro-spinal fluid escaped so abundantly as to soak through the mattress on which the patient was lying.

S. A. K. Wilson.

ACUTE MENINGITIS DUE TO EBERTH'S BACILLUS IN TYPHOID (602) FEVER. (Méningite aiguë à bacille d'Eberth pur au cours d'une dothiénentérie.)

Claret and Lyon-Caen, *Bull. et mém. de la soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 217.

A woman, aged 23, was admitted to hospital on the tenth day of typhoid fever. Eleven days afterwards symptoms of meningitis developed. Lumbar puncture gave issue to a clear fluid without marked hypertension from which a pure culture of typhoid bacilli was obtained. Cytological examination of the fluid showed 60 per cent. of polynuclears and 25 per cent. of mononuclears. A week later violent delirium occurred, and another 10 c.c. of cerebro-spinal fluid were withdrawn showing a pure lymphocytosis. A third puncture performed four days afterwards still showed lymphocytosis, but the culture was negative. Complete recovery finally resulted. The writers have collected twelve other cases from literature.

J. D. Rolleston.

THE OCCURRENCE OF REMISSIONS AND RECOVERY IN (603) TUBERCULOUS MENINGITIS: A CRITICAL REVIEW.

A. E. Martin, *Brain*, Aug. 1909, p. 209.

The writer's conclusions, drawn from a thoroughly critical review of various hospital records, and of cases recorded in literature, are as follows:—(1) That undoubtedly long remissions and even recoveries do occur in tuberculous meningitis. (2) That recoveries are possibly more frequent than has been believed, since no fewer than twenty undoubted cases have been recorded since 1894, while other cases of recovery have been published in which the same definite proof of the nature of the disease has not been afforded, but some of which probably were true cases of tuberculous meningitis. (3) That in these cases either the resistance of the individual is so much greater than usual that the disease is checked early in its course, or the virulence of the bacilli is so much less than usual that the lesion in the meninges becomes localized and later undergoes a fibrous change. (4) That the lesion in the meninges may at a later period form the focus of a fresh infection which usually terminates fatally, and that consequently the prognosis in these cases must be guarded. (5) That no treatment up to the present has been discovered which has had any specific effect in promoting the favourable termination of the disease.

J. H. Harvey Pirie.

PROGRESSIVE MARGINAL MENINGO-MYELITIS. RAYMOND and (604) CESTAN, *L'Encéphale,* July 10, 1909, p. 1.

THE authors describe three interesting cases. Briefly, the clinical picture is one of slowly progressing motor spastic paraplegia, with the characteristic reflex phenomena, with involvement of the sphincters, but with no alteration in sensibility of any sort, and no muscular wasting. The disease is essentially slow and progressive: no periods of improvement were noted, and mercurial treatment proved quite ineffectual. The similarity of the picture to that of Erb's syphilitic paraplegia is noteworthy. In the authors' cases the duration of the disease averaged eight years, and in two of them preceding syphilis was certain.

The pathological anatomy of all three is identical. A regular band of sclerosis encircles the cord from the cervical region to the sacral: this is made up of the sclerosed membranes (the pia most) and of a narrow area of peripheral or marginal sclerosis of the cord. The former are infiltrated by lymphocytes, and throughout the blood vessels are altered, being either penetrated by small round cells or having these cells clustered in their immediate neighbourhood. The maximum of the sclerotic process is attained in the cervical region. The cord itself shows no systematised tract degeneration, solely a ring of dense neuroglial sclerosis, which slowly spreads towards the centre, destroying the nerve fibres as it spreads. In the authors' opinion the condition is certainly of syphilitic origin, though the interval between the infection and the appearance of the disease amounts to eighteen years in one case and twenty-six years in one of the others.

S. A. K. WILSON.

1. MENINGOCOCCUS SEPTICÆMIA. SUCCESS OF ANTIMENINGOCOCCIC SERUM. 2. RESULTS OF SEROTHERAPY IN SIXTY-EIGHT CASES OF CEREBRO-SPINAL MENINGITIS. (605) **(1. Septicémie méningococcique sans méningite. Efficacité du sérum antiméningococcique. 2. Résultats du traitement sérothérapique dans soixante-huit cas de méningite cérébro-spinale.)** A. NETTER, *Bull. de l'Acad. de méd.,* Tom. 62, 1909, p. 106.

1. A GIRL, aged 6 years, whose sister had recently had a typical attack of epidemic cerebro-spinal meningitis, was admitted to hospital with high fever and a purpuric eruption. The first symptoms had been pain in the knees and diarrhœa. During the following days the purpura increased, blood appeared in the stools,

and erythema multiforme developed. There were no clinical signs of meningitis, and lumbar puncture performed on two consecutive days showed an absence of meningeal lesions. Owing to the history of infection, however, an intraspinal injection of 30 c.c. of Flexner's serum was given on admission and again on the following day. Within a fortnight of admission recovery took place. The meningococcal origin of the septicæmia was proved by the patient's serum in a dilution of 1 in 400 agglutinating two different strains of meningococci. Netter has collected three other cases of meningococcus septicæmia without meningitis (*v. Review*, 1909, p. 419).

2. The mortality among 68 patients treated with antimeningococcic serum was 23·5 per cent., which, on reduction of 8 cases either moribund on admission or in which death was not due to meningitis, falls to 12·5 per cent. The mortality among 23 children under two years was 43·5 per cent., and after reduction 31·5 per cent. Among the 52 cases which recovered, 7 had relapses. Only 4 cases were left with permanent infirmities—3 cases of deafness due to otitis interna and 1 case of blindness due to irido-cyclitis. Netter still advocates large and repeated doses of the serum. With very rare exceptions he injects every case for three consecutive days. If meningococci are then still present in the fluid, the injections are continued till they disappear, but in only 10 cases was it necessary to continue the injections beyond the third day. In one case which had three relapses, and finally recovered, twenty-two intraspinal injections were given. J. D. ROLLESTON.

MENINGOCOCCUS CARRIERS AND PROPHYLAXIS OF CEREBRO-SPINAL MENINGITIS BY DISINFECTION OF THEIR NASO-PHARYNX.

(606) **(Les porteurs de méningococques et la prophylaxie de la méningite cérébro-spinale par la désinfection de leur naso-pharynx.)** H. VINCENT and BELLOT, *Bull. et mém. de la soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 184.

THE vitality of the meningococcus in the naso-pharynx of carrier cases may range from six days to seven months. The writers record three cases in which the organisms disappeared within four days after inhalations of a mixture containing iodine, guaiacol and thymol. J. D. ROLLESTON.

SEVERE EPIDEMIC CEREBRO-SPINAL MENINGITIS. INJECTION OF 25 c.c. OF ANTIMENINGOCOCCIC SERUM WITHIN THE FIRST FEW HOURS. IMMEDIATE AND COMPLETE RECOVERY. (Méningite cérébro-spinale épidémique grave. Injection de 25 centimètres cubes de sérum antiméningococcique des les premières heures. Guérison immédiate et totale.)

(607) VILLEDARY, *Arch. de méd. et de pharm. mil.*, liv., 1909, p. 81.

A SOLDIER, aged 25, nine hours after the onset of a severe attack received an injection of 25 c.c. of serum, after 30 c.c. of cerebro-spinal fluid had been withdrawn. Within less than forty-eight hours from the onset and thirty-three hours after injection all the morbid phenomena had disappeared. The cerebro-spinal fluid was barely turbid, and yielded only a small deposit in which a few polynuclears and some large diplococci were found. The diagnosis was confirmed by discovery of meningococci in the naso-pharyngeal mucus. J. D. ROLLESTON.

CONTRIBUTION TO THE STUDY OF TUMOURS OF THE FOURTH VENTRICLE IN CHILDREN.

(608) BABONNEIX and KAUFFMANN, *L'Encéphale*, Sept. 19, 1909, p. 197.

A CASE like this is of little value. The disease had progressed so far that the characteristic symptoms of fourth ventricle tumour (if there are such) were complicated by much else: the patient had a double extensor response. What is wanted is information on the early diagnosis of tumours of the fourth ventricle and clinical histories in much greater detail than that recorded in this case.

S. A. K. WILSON.

DIAGNOSIS OF PITUITARY TUMOURS WITHOUT ACROMEGALY. (Die Diagnostik der Hypophysistumoren ohne Akromegalie.)

(609) L. v. FRANKL-HOCHWART, *Wien. med. Woch.*, 1909, pp. 2127, 2257, and 2326.

As this communication is already practically a summary of the symptoms observed in some 150 cases (personal observations and from literature) of tumours of the pituitary (and of the craniopharyngeal canal and of neighbouring structures where the pituitary has been involved, since these cannot yet be definitely separated) with which there is no acromegaly, any further abstract must be just a brief catalogue of the main features observed. Of general symptoms headache occurs in about two-thirds of the cases, vomiting in more than half, vertigo in one-fourth, and psychical disturbances in over two-thirds. Somnolence in about one-fourth. Disturbances of vision are practically always found, optic neuritis or atrophy, pupillary changes, anomalies of the external eye-muscles, and especially diminution in the temporal visual fields. Disturbances of taste, smell, and hearing are rare. Investigation of the nose occasionally shows escape of fluid, etc. Diabetes insipidus has been noted in about 7 per cent. of cases. Alterations in temperature are not infrequent. Bodily sensory disturbances—pains, paræsthesiæ, etc.—occur, but only rarely. Incontinence of urine is fairly common. The deep reflexes are sometimes exaggerated. Paralyses may be found, but usually only in advanced cases. Myasthenia gravis has once been recorded. Radiography reveals almost always changes in the shape of the sella turcica. Skin lesions are sometimes noted. The genital system is frequently affected — the organs being often poorly developed. The mammæ may also be hypoplastic in the female, hyperplastic in the male. Adiposity has been observed in about one-fourth of the cases. There is often falling out or defective growth of the hair in the axillary or pubic regions. Changes in the thyroid have been met with also, and sometimes in other glands. Stress is laid on the predominance of ocular symptoms, dystrophy, relatively long duration, widening of the sella turcica, subnormal temperature, somnolence, polyuria and polydipsia, and early onset of psychical disturbances. J. H. HARVEY PIRIE.

DIAGNOSIS AND TREATMENT OF PITUITARY TUMOURS.

(610) (**Zur Diagnose und Therapie der Hypophysisgeschwülste.**) Z. BYCHOWSKI, *D. Med. Woch.*, Sept. 9, 1909, S. 1561.

THIS paper records the case of a girl of 17 who for two years had suffered from headache. This became much worse; her sight began to fail and she had vomiting daily. On examination there was found bitemporal hemianopsia, excessive development of the panniculus adiposus and infantile condition of the genital organs. She had never menstruated. A skiagram showed a deepening of the sella turcica with partial disappearance of the clinoid processes. Investigation of the nose revealed nothing abnormal. She was operated on by v. Eiselsberg by the nasal route, a small cystic tumour of the pituitary removed, and, despite a meningitis attack, made a satisfactory recovery. Eight months later menstruation had not commenced. J. H. HARVEY PIRIE.

TWO SIGNS IN ORGANIC HEMIPLEGIA OF THE LOWER EXTREMITY.

(611) ROMAGNA-MANOIA, *L'Encéphale*, Sept. 10, 1909, p. 236.

THE author corroborates the frequency of two signs described recently by Raimiste.

(*a*) The patient lies on his back in bed, with arms crossed and legs extended and widely abducted. He is then asked to bring the sound limb to the paralysed one without lifting it off the bed. The examiner at the same time grasps this sound leg to prevent the patient from making his effort: as the latter endeavours to effect his object, the paralysed limb will be found to move towards the sound one.

(*b*) An identical procedure with the legs adducted, the patient being asked to separate them. In this instance the sound leg is again held, with the result that the paralysed leg moves away.

S. A. K. WILSON.

THE MUSCULAR FORCE IN PARALYSIS AGITANS. (Sur certaines particularités de la force musculaire dans la maladie de Parkinson.) DYLEFF, *L'Encéphale*, July 10, 1909, p. 28.
(612)

THE author amply corroborates the old observation of Trousseau (1865) that the patient with paralysis agitans is often well able to resist a passive movement, whereas he exhibits great feebleness in the execution of an active movement. The force of static muscular contraction is much better preserved than that of dynamic muscular contraction, and this may be so in muscles in which rigidity and stiffness are pronounced.

S. A. K. WILSON.

A NEW CASE OF ACHONDROPLASIA IN THE ADULT. LEVI, *Nouv. Icon. de la Salpêtrière*, March-April 1909, p. 133.
(613)

ONE point of interest deserves special mention in this characteristic case of the disease. Radiographs of the hands and feet show very clearly that the third metacarpals and third metatarsals (fourth if the thumb and great toe are counted as the first) are much shorter than the other metacarpals and metatarsals. This has been noted by the author in other cases of the same disease.

S. A. K. WILSON.

DELIRIUM TREMENS. A CLINICAL STUDY. (Delirium tremens. Eine klinische Studie.) WASSERMEYER (of Kiel), *Arch. f. Psychiat.*, Bd. 44, p. 861.
(614)

A DETAILED study of the disorder on the basis of 284 cases observed in Siemerling's clinic, with a review of the results of other authors. A bibliography of 149 references.

C. MACFIE CAMPBELL.

PELLAGRA. R. DODS BROWN and R. CRANSTON LOW, *Edin. Med. Journ.*, Sept. 1909.
(615)

As far as could be ascertained by the authors of the article, this is the second case of pellagra recorded in Great Britain. The patient, a young unmarried woman, never worked with or ate maize, but she had formed the habit of taking mouthfuls of rice and oatmeal in the raw state. She presented all the classical features of pellagra—viz., nervous, gastro-intestinal and cutaneous. She came under observation on account of her mental symptoms.

The case is looked on as belonging to the class of cases of sporadic pellagra or pseudo-pellagra, where the condition is due to general debility from poverty, insufficient nourishment and bad hygienic surroundings. AUTHORS' ABSTRACT.

THE CLINICAL AND POST-MORTEM ASPECTS OF THE (616) STATUS LYMPHATICUS. ERNEST HUMPHRY, *Journ. Ment. Sc.*, July 1909.

THIS disease is most important in view of the numbers of deaths under anæsthetics. Owing to the fact that it is so often missed clinically and not recognised at the post-mortems, which ought to take place in every death under an anæsthetic, this disease appears to be much rarer than it really is. The author has seen six cases in two and a half years, and considers it is associated with hereditary neuroses. He describes at length the most constant physical signs and symptoms, which he admits are rather indefinite. Then follows a detailed account of the morbid naked-eye changes, with the two special features of a persistent and enlarged thymus, and the co-existence of hæmolymph glands in the mesentery. The article concludes with the clinical and post-mortem record of the last of the six cases the author has personally examined and observed. RAE GIBSON.

NEURO-RETINITIS IN TYPHOID FEVER. J. V. CLOTHIER, *N.Y.* (617) *Med. Journ.*, i., 1909, p. 748.

A GIRL, aged 16, who two months previously had been fitted with spectacles for hypermetropia was taken ill with typhoid fever on December 24. The disease ran a typical course till January 6, when she complained of photophobia, and the next day could not see the doctor or her family. Ophthalmoscopic examination showed bilateral neuro-retinitis. The temperature gradually declined, and the retinitis concurrently subsided. A relapse of typhoid fever occurred on January 21, but the vision steadily improved. No albumin was found in the urine.

J. D. ROLLESTON.

UNUSUAL CASE OF FACIAL PARALYSIS. H. H. B. CUNNINGHAM, (618) *Brit. Med. Journ.*, Sept. 18, p. 744.

AFTER mentioning the anatomical relations of the facial nerve to the tympanum, Mr Cunningham groups the ætiological factors of facial paralysis under three headings, viz. :—

1. *Central*—
    - Tumours in and at the base of the brain.
    - Meningitis.
    - Nuclear degeneration as in labio-glossal paralysis.
2. *Osseous* (in the Fallopian Canal)—
    - (*a*) Inflammation extending to the osseous walls, thence to the sheath and to the nerve itself.
    - (*b*) Caries and necrosis of the aqueduct, the destruction extending to the nerve itself.
    - (*c*) Injury to the nerve during operations on the accessory cavities of the middle ear.
3. *Terminal* (after exit from the stylo-mastoid foramen)—
    - (*a*) Injuries to the nerve.
    - (*b*) Implication in cellulitis and growths in the neck.
    - (*c*) Influenza, diphtheria, and syphilis, giving rise to neuritis.
    - (*d*) And finally the so-called rheumatic type.

It is, however, suggested that the so-called rheumatic type is really due to an evanescent attack of otitis media, R. Lake and Sir Wm. Dalby being quoted in support of this theory.

In the second group an acute otitis media, by implicating the osseous walls of the Fallopian canal, may easily cause suspension of its function, through the pressure exerted on the nerve by inflammatory exudation; this, however, can be recovered from when the pressure subsides; whereas in a case of chronic otorrhœa the paralysis is a definite symptom of caries of the bone, and so implication of the nerve. Attention is drawn to the proximity of the nerve to the labyrinth, Politzer being quoted as showing that the facial nerve was involved in 83 per cent. of cases of labyrinthine necrosis.

Facial paralysis terminates in three ways:

1. Return to normal function.
2. Persistent paresis of the whole or of part of the nerve.
3. Complete permanent paralysis.

Maggie G., aged 9, came to the hospital in June 1907, giving a history of previous double otorrhœa, with complete right facial paralysis of a fortnight's duration, some deafness, no headache, vomiting, or pain, the right tympanic membrane was almost wholly destroyed. A complete post-aural operation was performed, the wound healed up well, and the paralysis slowly resolved. Galvanism was employed to aid this process, in October the paralysis had almost resolved, and the hearing was equal in the two ears, though still subnormal. In May 1908, or twelve months later, patient came to hospital with an almost complete paralysis of the left side of the face of two days' duration, no history of pain or of otorrhœa, vomiting or vertigo, but considerable amount of deafness; the left tympanic membrane was almost destroyed. Three days later a post-aural operation was performed on this side; on the following day the paralysis was less marked, and rapidly cleared up from this on, and had quite resolved in less than a month. The hearing, too, improved considerably.

A case presenting similar features on each edeihs of t face at an interval of twelve months only must be somewhat unusual, and is instructive too, for the same surgical treatment was adopted in each instance; yet in the instance in which the paralysis had existed for at least a fortnight before treatment the recovery was very slow, even with galvanism, whereas where its duration was only five days in all before treatment, improvement was noticed on the following day, and it had quite resolved in less than a month. This case, therefore, clearly suggests the advisability of early surgical treatment in lesions of this nature. AUTHOR'S ABSTRACT.

PSYCHIATRY.

SOMATIC SYMPTOMS IN FUNCTIONAL PSYCHOSES. (**Körper-**
(619) **liche Symptome bei functionellen Psychosen.**) A. KNAPP (of Göttingen), *Arch. f. Psychiat.*, Bd. 44, p. 709.

IN this paper of 80 pages the author discusses in some detail the occurrence in functional psychoses of certain bodily symptoms, which appear to be not mere casual incidents, but to depend upon the morbid processes lying at the basis of the disorders. Such somatic symptoms are usually referred to definite organic changes, and are frequent in the organic psychoses. The symptoms discussed are those which involve the pupillary reflexes, tendon reflexes, muscular tonus, sensibility, motility, speech, writing, secretion, the vascular system, the temperature, and trophic equilibrium.

As to the pupils: In dementia præcox the reaction of the pupil to psychic and painful stimuli is frequently lost; the pupil is apt to be wider than the normal average; there are now numerous observations published of the presence of Argyll Robertson pupil in dementia præcox, but the question of previous syphilis has not always been sufficiently considered; the pupils frequently show considerable variation of form, and the light reaction many be variable.

The tendon reflexes may be increased, and ankle clonus may be present; the forms of psychosis referred to include the "akinetic motility psychosis" of Wernicke, a case of an agitated anxiety psychosis, post-epileptic transitory psychosis.

Diminished tendon reflexes are occasionally found; the knee-jerks may be absent, and the absence not be explained by any adequate exhaustion. In hebephrenics the liveliness of the tendon reflexes may vary quickly. The author refers briefly to several interesting cases. In most of the cases psycho-motor symptoms played a prominent rôle.

Alterations of muscle tone are common in the most diverse psychoses; diminution is more frequent than increase. Hypotonia is sometimes general, more frequently only partial. The condition of the muscle tone is not always parallel with that of the tendon reflexes.

Motility disorders include paralytic and irritative phenomena. Transitory paralyses may occur in cases where there is no ground for assuming the presence of organic change and where hysterical symptoms are absent. The face is a more frequent seat of such symptoms than the extremities.

In discussing the disorders of speech, Knapp refers to Wernicke's classical case where a complete motor and partial sensory aphasia developed out of a motility psychosis. In four cases the author observed the symptom-complex of a transcortical motor aphasia in most definite form. The presence of stuttering as a special form of general parakinesis is referred to.

Articulatory disorders are met with and may be similar to those encountered in multiple sclerosis and general paralysis. Similarly the writing may present more than a superficial resemblance to that found in cases of organic disorder.

The cardio-vascular and secretory disorders are finally discussed, and a bibliography of 41 references is appended.

C. MACFIE CAMPBELL.

COMPLICATED ACUTE AND CHRONIC ALCOHOLIC "HALLUCINOSES." (Komplizierte akute und chronische Alkoholhalluzinosen.)

(620) F. CHOTZEN (of Breslau), *Allg. Ztsch. f. Psych.*, Bd. 66, Ht. 1.

IN this article the author takes up again the subject of several previous communications. Certain psychoses so obviously depend upon alcohol as the etiological factor that they can safely be called alcoholic psychoses; but frequently, and especially after many attacks, more complicated pictures may arise, or out of a fairly typical acute psychosis there may develop an atypical chronic psychosis which resembles in its symptomatology other chronic psychoses of non-alcoholic etiology. Are such atypical psychoses to be called alcoholic, and to what are the atypical features due? Or are such psychoses to be considered as combined psychoses? Some of the factors which complicate the picture may in their turn be due to alcohol, *e.g.* arterio-sclerosis, disordered metabolism, etc.; a basis of degeneracy may only be revealed by the alcoholic excesses, and in its turn may complicate the psychosis.

The author arrives at the following conclusions:—So-called chronic alcoholic psychoses, which are atypical from the start, are not pure alcoholic psychoses, but are due to the mixture of various groups of symptoms, they are combinations. In some cases, however, a chronic psychosis may develop out of an undoubted alcoholic psychosis. Acute "hallucinoses" with atypical symptoms are not pure alcoholic psychoses.

Hallucinations of smell and taste and hypochondriacal sensations do not occur in the uncomplicated alcoholic "hallucinosis"; alcoholic psychoses which present such symptoms are complicated by degenerative admixtures. When cases of undoubted alcoholic "hallucinosis" pass into a chronic state, they almost without exception then develop atypical features, which are due to complications; the latter are also caused by alcoholism. A cohol is not to be looked upon as a simple unitary causative factor. Alcohol tends to produce an early senium with arterio-sclerosis, and, on the base of the latter, degenerative symptoms arise.

It is extremely rare to find an alcoholic "hallucinosis" run a chronic course without the appearance of atypical features; the term "chronic alcoholic hallucinosis" should be reserved for these rare cases; the atypical cases should be grouped as "complicated alcoholic hallucinoses." The "hallucinatory dementia of chronic alcoholics" (Kraepelin) arises out of such complications.

C. Macfie Campbell.

A BACTERIOLOGICAL INVESTIGATION INTO GENERAL (621) PARALYSIS OF THE INSANE, AND A TABLE OF BLOOD COUNTS.

David Thomson, *Journ. Ment. Sc.*, July 1909.

Describes a bacillus which he found in the spleen of a patient who died at Horton Asylum. Thinking this might be the bacillus paralyticus mentioned by Ford Robertson, careful search was made for them in the various viscera of patients who died of general paralysis. The blood of several of the patients also was examined before and after death. In all, forty general paralytics and fifty other patients as controls were examined. There were two forms of bacillus present, short and long, producing strong acid formation and gas in glucose broth. They were Gram negative and sometimes arranged in chains. Gives a detailed account of the frequency with which the organisms were found in the different organs in the general paralytics and in the control cases, and a description of their reactions in various culture media. Considers his results indefinite, but points out that the bacilli were found much more frequently in the general paralytics than in the control cases. The bacilli probably belong to the intestinal groups, and thinks they may have invaded the blood during the final moribund state of the patient. Concludes with a tabulated form of thirty blood counts in general paralysis, which show an average leucocytosis of 9353. RAE GIBSON.

ON THE CONCEPTIONS OF IMBECILITY AND SO-CALLED (622) MORAL INSANITY FROM THE PRACTICAL AND THE MEDICO-LEGAL POINT OF VIEW. (Über die Bewertung der Imbezillität und der sogenannten Moral Insanity in praktischer und forensischer Beziehung.) A. FRIEDLÄNDER (of Hohe Mark), *Monatsschr. f. Psych. u. Neur.*, April 1909.

THE author first gives a brief summary of a case which exemplified in a striking manner the practical and medico-legal difficulties raised by a certain type of constitutionally inferior person. The individual as a child had shown want of affection to his parents and tutors, had been cruel to animals, untrustworthy, shiftless, unable to resist all evil influences ; at eighteen the father of an illegitimate child in which he took no interest, a spendthrift, but intellectually well endowed. Although of excellent family he married a woman of more than doubtful reputation. An endeavour was made to annul the marriage, and after a long law-suit this was done. Various experts gave different diagnoses—sexual neurasthenia, dementia præcox, not insane, moral insanity, feeble-minded and insane, mentally defective without being insane.

Such a conflict of expert testimony tends to create doubts in the lay mind, not only on the knowledge but also on the good faith of the expert.

The importance of a prolonged examination of such a patient before arriving at a diagnosis is emphasized ; when such a patient is temporarily in good equilibrium the physician may be much misled by the result of a single examination.

The author considers that from the practical point of view the conception of moral insanity is unsound ; if the existence of moral defects be due to a morbid process, then the whole organism is affected by the disorder, and the whole mentality of the patient has to be considered. The difficulty of finding suitable occupation for such patients is emphasized ; supervision must last several years, the life must be carefully regulated, the temptations of city life must be eliminated ; such patients cannot be left to themselves even when settled in agricultural pursuits.

It is inadvisable to bring the conception of moral insanity into the law courts. The moral defect can only be shown by the alienist to be a legal ground for escaping punishment, when it can be demonstrated to be one symptom of a pathological disorder of mental activity. Careful and repeated examination enables the alienist to demonstrate the involvement of the other functions. The correct legal attitude towards the imbecile is frequently a matter of extreme difficulty, especially when the question arises whether one is dealing with mental disorder or mental enfeeblement.

From the practical point of view the author emphasizes the impaired resistiveness, the weak will of these inferior individuals. For medico-legal decisions the necessity of protection should be the criterion, for practical management the degree of the impairment of volition.

It is this latter which leads the individual into scrapes so soon as the parental tutelage is at an end. If one has correctly estimated the resistiveness of the defective, "the extent of his will, the vigour with which he can resist exogenous influences, in other words, the extent of the endogenous impairment of his will, then we have in difficult cases the standard for the practical estimation of the degree of responsibility." The author quotes several decisions in the German courts bearing on his subject.

C. Macfie Campbell.

ON ACCOMMODATION FOR INSANE CRIMINALS. (Uber die Unterbringung geisteskranker Verbrecher.)

(623) H. Stengel (of Bruchsal) and A. Hegar (of Wiesloch), *Allg. Ztsch. f. Psych.*, Bd. 66, Ht. 1.

Stengel bases his discussion on the results of his observation of insane criminals during three and a half years in the insane division annexed to the Bruchsal penitentiary, and on an analysis of the patients, not in this annex, who during the years 1905-08 became insane while in the penitentiaries of Baden. His conclusions are as follows:

1. Insane prisoners must at the earliest moment be removed from the usual prison routine and receive psychiatric treatment. The most suitable arrangement is to have divisions for the insane as annexes to the prisoners.
2. These annexes should be reserved for insane convicts, while prisoners not yet convicted should be cared for in the ordinary insane asylums.
3. The annexes are not to be considered as the permanent abode of insane convicts; their aim is to be curative, and where this is impossible the patients should as soon as possible, and at the latest on expiry of the sentence, be transferred to an insane asylum.

4. In Baden the number of such cases requiring permanent custodial care is not sufficient to cause practical difficulties. The majority belong to the dementing processes and require merely the same care as the non-criminal patients. The minority belong to the degenerates and require the most careful supervision.

5. In prisons there are many mentally defective; the great majority of these do not require psychiatric treatment, but merely a prison discipline suitable to their individual needs.

Hegar discusses the topic from the point of view, not of the prison physician, but of the asylum physician. His conclusions are as follows:

1. The criminal inmates of the Baden asylums may be divided into two groups: (*a*) A very small number in whom the psychosis has nothing to do with the criminality, or in whom the criminality depends directly on the psychoses (usually of exogenous origin); (*b*) the great majority derive their criminality partly from an inherited inferiority or disorder or a psychopathic constitution of unknown origin, and partly from a mental disorder of endogenous origin developing in early life and having criminal tendencies as the earliest and most essential feature. The influence of the environment is not clearly demonstrable.

It is with regard to class (*b*) that the question of special measures arises.

2. There can be no question of separating the constitutionally inferior; their delimitation is too uncertain, and the episodic psychoses which they are liable to present require merely the same management as in the case of the non-criminal.

3. The care of the insane criminals in special institutions is only possible in large communities.

4. The plan to have special annexes to insane asylums in which the most dangerous elements from a large district would be brought together should be discarded.

5. The overwhelming majority of insane criminals require the same accommodation and treatment as the non-criminal insane: with regard to the turbulent minority, they should be divided among as many institutions as possible, and in the institutions themselves they should not be allowed to come together, and should be treated in divisions which form an integral part of the asylum.

The conclusions of the authors only give a very general idea of the questions involved; the discussions deserve to be read in full.

C. MACFIE CAMPBELL.

TREATMENT.

THE TREATMENT OF PROFESSIONAL CRAMPS. (Etudes sur (624) les crampes professionnelles.) MACÉ DE LÉPINAY, *Nouv. Icon. de la Salpêt.*, May-June 1909, p. 288.

IN this article, the last of a series of three upon the occupation neuroses, the author deals with treatment, especially with reference to writer's cramp. Prophylaxis is hardly possible, but persons predisposed by a neuropathic heredity or history should avoid occupations which involve mental and muscular overstrain. The author considers that intoxications of all kinds predispose to this affection, and especially alcohol, tobacco, and Bright's disease. A good method of writing should be adopted by those who write much, *e.g.* a large, round, upright hand, as recommended by Meige.

For the disease itself internal treatment is of little value. Cod-liver oil has been recommended. General conditions, such as Bright's disease, should be attended to. In accordance with the view that local peripheral lesions in the affected limb, such as arterial changes, synovitis, myositis, or neuritis, may serve as starting-points for the disorder, these, when present, should be treated and removed. Treatment proper should be a combination of physical and psychical methods. The primary indication is professional rest, but this is neither sufficient by itself nor indispensable. Electricity, both faradic and galvanic, has been employed. The two most useful physical methods consist of massage, applied systematically to the relaxed muscles, and hydrotherapy, both general and local, applied according to the special indications of the particular case. The latter is preferably combined with a mineral water cure at a spa. The psychical treatment is a necessary complement to the physical, and consists in a slow, patient, and methodic re-education of the affected muscles, similar to that which is practised in tabes. The principle of it consists in a decomposition of the complex movements, which are irregularly performed, into a number of simple movements, slowly and carefully carried out by the patient. A special writing position is described. The patient begins by practising simple strokes, dipping his pen in ink between each, under the supervision of an instructor, who times him. Next, he proceeds to letters, each decomposed into several strokes ; next, a complete letter is written between each dip of the pen, then two, then three letters, and so on, and finally words in gradually increasing numbers. He is next made to write at home, and show his copy, and in addition writes to dictation. The exercises are begun with a round-pointed pen, which is finally changed to an ordinary one. Lastly, the patient resumes the normal position of the hand in writing. This is Kouindjy's method. Other authors employ various modifications. The method appropriately altered is applicable to every professional cramp.

In addition to these exercises, however, there must be a psychotherapy. The combination is Brissaud's psycho-motor discipline. The object of the exercises must be reasonably explained to the patient, and he must be induced to actively collaborate with his instructor. This writing must be slowly and attentively performed. Automatism is to be replaced by voluntary and considered action. Good results may be expected in two to four months. Along with psychotherapy, the treatments above mentioned will produce complete and durable cure in a great number of cases.

J. P. LOWSON.

THE TREATMENT OF CONVULSIONS IN WHOOPING-COUGH (625) BY LUMBAR PUNCTURE AND AFFUSIONS. (Die Behandlung der Keuchustenkrämpfe mittels Lumbalpunktion und Uebergiessungsbädern.) ECKERT, *Münch. Med. Woch.*, 1909, p. 1595.

CONVULSIONS in whooping-cough are very fatal, especially in young children, and are not amenable to ordinary methods of treatment. The considerable meningeal and cerebral œdema found at the autopsy of such cases suggested the idea of relieving the condition by lumbar puncture. The paper contains a record of four successful cases in children aged from eleven to seventeen months in Heubner's clinique at the Charité in Berlin. From 10-25 c.c. of cerebro-spinal fluid were removed. The tension was high, but cellular elements were absent and the albumin was scanty. Lumbar puncture was followed in each case by cold affusions. The removal of a small amount of fluid probably promotes absorption of the rest, as often happens in cases of pleural effusion in which the aspiration of a few c.c. renders further measures unnecessary. The cold water affusions cause powerful inspirations whereby the engorged veins are emptied which have given rise to the œdema.

J. D. ROLLESTON.

Reviews

IMPORTANT DECISIONS IN LEGAL PSYCHIATRY. (Wichtige Entscheidungen auf dem Gebiete der gerichtlichen Psychiatrie 8 Folge.) G. VOSS. Carl Marhold, Halle, 1909, pp. 62. M. 1.

THIS is the eighth annual appearance of this little volume. It gives a brief summary of all the more important decisions in the German courts during 1908 in cases where questions with a psychiatric bearing were raised. They are classified according as they fell to be dealt with under the penal code, civil code, military law, insurance law, etc. Although naturally of greatest value to German medical jurists, the references to the literature of the cases might well be found of value to both medical men and lawyers in this country interested in cases where questions of insanity are involved. J. H. HARVEY PIRIE.

LES ACCIDENTS DU TRAVAIL, et la loi de 12 avril 1906. Par Dr LOUIS DEFAY. Lyon: Waltener et Cie. 1908. Pp. 175.

THIS is a short study of the principles underlying the French "Workmen's Compensation Act," and deals with the question of employers' liability, the development of compensation principles prior to 1906, the theory of professional risk, the value of the present Act, and the reasons assigned for still excluding certain sections of the population from its scope. The whole question is, however, dealt with from the juridical point of view, and it cannot be said to have much interest for the medical profession.

J. H. HARVEY PIRIE.

BOOKS AND PAMPHLETS RECEIVED.

Australasian Medical Congress. "Transactions" of the Eighth Session held in Melbourne, Victoria, Oct. 1908. Three volumes. Kemp, Melbourne, 1909.

Bruce Ferguson. "The Position and Rotation of the False Image in Paralytic Diplopia, represented diagramatically." Reprinted from *Clin. Journ.*, March 1895.

Tirelli. "Esami macroscopici ed istologici su ossa di alienati." Ditta A. Spandre e C., Torino, 1908.

Tirelli. "Gli infermieri dei Manicomi debbono essere compresi nel novero degli 'operai' per i quali é obbligatoria l'assicurazione contro gli infortinu del lavoro." Ditta A. Spandre e C., Torino, 1909.

Tirelli. "Su di un caso di suicidio per colpo di revolver all' orecchio." Ditta A. Spandre e C., Torino, 1909.

Sigmund Freud. "Selected Papers on Hysteria and other Psychoneuroses." Authorised translation by A. A. Brill. New York, Journ. of Nerv. and Ment. Dis. Publishing Co., 1909.

Loeb. "Die Bedeutung der Tropismen für die Psychologie." Leipzig: J. A. Barth, 1909. M. 1.

Jacobsohn. "Über die Kerne des menschlichen Hirnstamms." Georg Reimer, Berlin, 1909.

Review

of

Neurology and Psychiatry

Original Articles

ON THE LOCALISATION OF AGRAMMATISM.

By Professor A. PICK, Prague.

In the following paper the author presents what he believes to be a conclusive contribution to a still open controversy. It does not, indeed, belong to the region of greatest interest to the neurologist, but as evidence of its importance he would appeal to the fact that when the question came under consideration, more than ten years ago, it took the form of inquiring *whether we could assume for agrammatism as one of the higher mental functions a circumscribed localisation.*

In order to understand the following account it should be remembered that the author in his previous contributions to the subject, in 1898, supported the view of a localisation in the left temporal lobe, and, indeed, in the neighbourhood of the auditory speech centre; whilst since then other writers, Bonhoeffer and Heilbronner in particular, have adopted the view which Broadbent had previously held, that the site of the lesion was in the left frontal lobe, and especially in the neighbourhood of Broca's convolution. It is not the writer's task in this paper to determine the pros and cons of the argument, but it may be remarked that the facts upon which the latter view is based are open to grave objections.

Somewhat more than eight years ago the writer, in support of the standpoint which he had taken, showed to the Society of

German Physicians at Prague a patient suffering from agrammatism. The report of the meeting of 15th February, which, owing to the author's dislike to preparing references of communications, was very concise (*Prag. med. Wchnschr.*, 1901), runs as follows :—

"Professor A. Pick showed first a case of agrammatism. It seemed very probable, both from the clinical symptoms and the anamnesis, that the views which he had expressed in his earlier works as to the significance of the left temporal lobe in agrammatism were applicable in this case." Hardly any serious notice was taken of this communication in the literature, and for that reason the writer now feels himself called upon, as the patient has since died in the Clinic, to give to his colleagues a short account of the clinical aspects as well as of the result of the post-mortem examination of the case.

On 23rd January 1900 K. Josef, a retired soldier, 75 years of age, of Czech descent, was brought into the Clinic on account of a condition of excitability which he had lately developed. The patient was not alcoholic, and with the exception of an inflammation of the eyes, which he had acquired during his long service in the army, he had always been healthy, and latterly he had wandered from village to village with a barrel-organ. He had returned home one day, some ten weeks before his admission, complaining of severe headache, especially on the left side, and had then fallen unconscious upon his bed. He lay there for about three weeks, apparently showing the symptoms of an apoplectic shock, which the doctor had diagnosed. He recognised no one, and to all appearance could not move. In about a fortnight, after he had recovered, his speech returned, but he spoke " disconnected nonsense," a jumble of Czech, German and Italian, the two last of which he had picked up during his long military service. During the last fortnight, when he was quite free to move about, he became very excited if his wishes were not at once carried out, and threatened his relatives. The fact that what he said was unintelligible to them may probably have played some part in this. The only doctor who saw him during his illness supplemented his report as follows :—" No paralysis was ever detected, certainly not on the right side. As to his speech, at first single words only were intelligible, the rest were "expressions which could not really be considered speech," and were neither German, Italian, nor Croatian. Later he spoke more Czech, but it was quite unintelligible, and the patient supplemented his defective speech by signs."

In addition to the symptoms of senility, the following positive facts as to his physical condition were noted in the Clinic:—No signs of paralysis, except a slight deviation of the tongue to the right; sensibility normal; reflexes normal; old maculæ on the cornea; in the right eye, examination showed merely that the reactions of the pupils were appreciably present. On the left it was found, in spite of the opacity, that the pupil reactions were present and that the fundus of the eye was normal. Fingers were seen at the distance of 1 m. on the right, of 3 m. on the left. With 10 D he recognised letters on the test-types, but named them wrongly. He could relate many things about his past life, so that taking into consideration the apparent errors due to the speech affection, it was evident that his memory was somewhat diminished, but was not defective to any marked degree. He had a good comprehension of his speech trouble, and he stated that he had formerly also spoken a little Italian and a good deal of German. His speech was fluent and properly pronounced, and the disturbance was that in the course of his speech he used words which were quite wrong or which partly resembled the correct words by a paraphasia of letters, or others which were transformed by displacement of letters and syllables. Repetition of well-known phrases (the Lord's Prayer, the ten commandments) was quite correct. Singing was impossible, although it had apparently not been so previously. In attempting to speak German the patient produced various fragments which for the great part he pronounced correctly, but he occasionally mixed up with it a Czech word to which he gave a German ending. He could write nothing except his own name (he was never at school). In repetition the paraphasia was really very slight. His understanding of speech was absolutely intact.

The most noticeable thing about his speech in Czech at this time was a very defective use of terminations, conjugations and personal pronouns, so that had we not been aware of the paraphasia we should have thought his speech like that of a German who had been badly taught Czech grammar, and it was thus regarded by his relatives and the other Czech patients in the Clinic, who said of him that he spoke Czech " like a German." (For those uninitiated in the difficulties of Slavic language, one must say that a German who has not from his youth learned Czech both by common use and in school hardly ever succeeds in speaking it with grammatical correctness, as, apart from many other things, it has no less than six conjugations, ten declensions, and seven cases. If these latter are not correctly used the mistakes which arise give to the speech a very peculiar and comical turn.) As to the patient's condition at the time of his admission to the Clinic, it should be added that he showed a complete absence of any agnostic or apraxic symptom.

The patient's speech gradually improved, to such a degree that the paraphasic symptoms almost entirely disappeared. The agrammatism also gradually improved, but even until he left the Clinic some remnants of it were still present. These were very slight, however, and it was often only after a long conversation that one noted some slight fault of construction. There was also slight amnesic aphasia.

In July 1908 the patient had an attack of vertigo, after which for a short time he apparently had difficulty in understanding what was said to him. On the 23rd of September he had an apoplectic shock. After this no difference could at first be detected between the two sides. There was conjugate deviation of the head and eyes to the right. Later the left side was found to be paralysed. In the evening, when asked how he was, he said distinctly " bad " (using the Czech word). At that time there was Babinski sign on the left, but no patellar reflex. On the following day the paralysis of the left arm was somewhat less, and on the 26th, the day of his death, the patient twice answered questions suitably with one word.

At the autopsy on the following day the brain was seen to be slightly atrophied, the atrophy being rather more marked on the left hemisphere. There was very slight thickening of the meninges, and the basal arteries were irregularly thickened. There was no other visible change, especially no focus. After the brain had been hardened for fourteen days in formol, the cerebellum and the hemispheres were separated from each other, and a frontal section was made through both hemispheres about the middle of the optic thalamus (Fig. 1). This transverse

To face page 760.

PLATE 19.

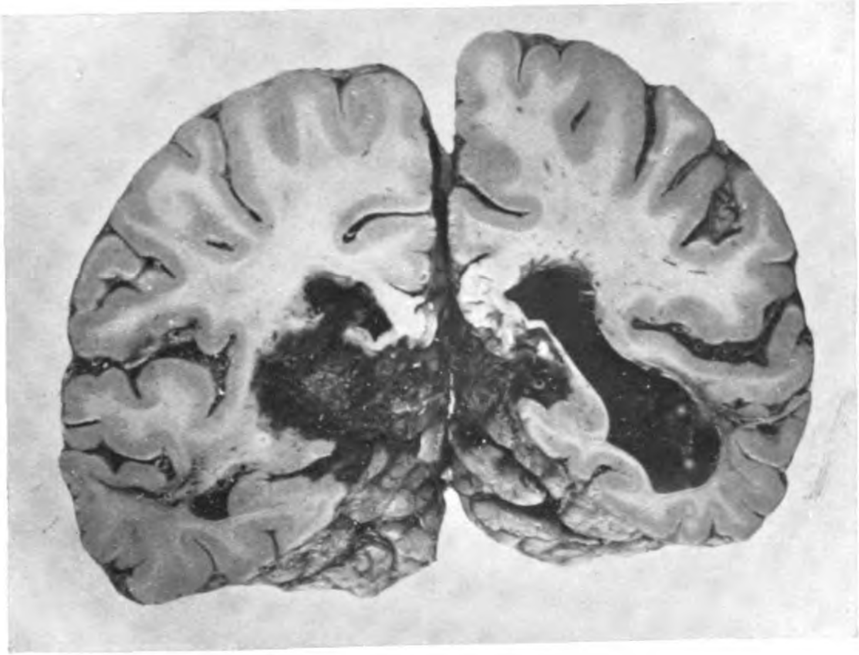

FIG. 1.

To illustrate Professor Pick's Paper.

section, looked at from in front, revealed the following changes:—

The *left* hemisphere showed a greatly dilated ventricle. The white matter of the second temporal convolution was softened, in the form of a small cavity with a brownish wall. This softening occupied also a very small area of the cortex and extended inwards as far as the external wall of the lateral ventricle.

In the *right* hemisphere the optic thalamus was completely destroyed by a recent hæmorrhage. The lateral ventricle was also dilated, though much less so than that of the opposite side. In the white matter of the second temporal convolution, at the same site and to the same extent as in the left, but not extending into the cortex, was another similar brownish focus of softening.

A complete series of thin sections (frontal) showed that there were no foci of any kind in the brain with the exception of these three.

The fresh focus in the optic thalamus of the right side was confined to its posterior half. Both the foci in the second temporal convolutions are old hæmorrhages of almost the same size, but of different ages.

The left focus extended through the whole posterior half ot the convolution to the site where it passes into the angular gyrus, involving only the medulla of the second temporal convolution. It attained its greatest size in the middle, where the whole white matter of the second temporal convolution was destroyed, the destruction extending into the subcortical layer of the first temporal convolution. On microscopic examination the focus was found to consist of a glial and connective-tissue cicatrix, which from the abundant blood pigment, both in masses and in the interior of granular cells, may be classified as a focus of old hæmorrhage.

The focus in the right temporal lobe extended forwards to exactly the same degree as the focus on the other side. Towards the back it did not extend beyond the most posterior part of the second temporal convolution. It did not destroy the whole medulla of this convolution, but left the lower part of the medullary layer free, reaching, however, here and there into the medulla of the first temporal convolution. The cause of the destruction was found on histological examination to be in part a free extravasated hæmorrhage, surrounded by granular cells filled with a quantity of blood pigment. There was no evidence of glial proliferation.

The results of the autopsy thus shortly described and supplemented by examination of the serial sections, which will later be followed by an exhaustive description by Dr O. Fischer, seem to be on the whole so obvious that a few words only must be said with regard to them.

The almost absolutely symmetrical involvement of the right temporal lobe was a matter for surprise. The apparent difficulty of explaining this was easily set aside when we remember that the focus on the right side, which was seen to be the more recent, had occurred in July 1908. The circumstance that this hæmorrhage occurred during vacation explained why the symptoms had not been studied with fuller attention. In any case the important fact was noted that difficulty in understanding words followed the fresh hæmorrhage. This was apparently a neighbouring symptom which first pointed definitely to the temporal lobe.

Objections may be raised to the conclusions drawn by the writer as to the localisation of agrammatism on the ground that there may have also been an old focus situated in the region destroyed by the fresh one. He does not think that he will have to prove to the readers of this *Review* that even had this been the case it would not have given rise to agrammatism, or, at any rate, not to an agrammatism corresponding to the localisation assumed by the supporters of the frontal theory. He may, therefore, conclude that if a local diagnosis made during life and confirmed by post-mortem examination can be regarded as deciding between the opposing views, the case under consideration is the first of agrammatism in which the predictions as to post-mortem conditions have shown themselves to be entirely correct. It therefore leads us to the conclusion that *in this case an unusually pure form of agrammatism was caused by a lesion localised in the left temporal lobe, and mainly in its second convolution.* As regards the significance of the symmetrical lesion in the right temporal lobe, there can be no doubt that it had no direct connection with the agrammatism which had developed eight years previously.

CASE OF AMNESIA VERBALIS, WORD- AND OBJECT-BLINDNESS, WITH AUTOPSY.

By WALTER K. HUNTER, M.D., D.Sc.,
Physician to the Glasgow Royal Infirmary.

SINCE the appearance, some three and a half years ago, of Pierre Marie's paper, entitled, "Révision de la question de l'aphasia,"[1] there has been much discussion on the subject of aphasia and its allied disorders, and any fresh observations likely to throw light on the localisation of the speech centres are studied with renewed zeal and attention. It is not claimed that the following case adds in any way to the elucidation of the points in dispute, for the clinical record is unfortunately incomplete, and the lesion found post-mortem is somewhat extensive. Still, the case has a clinical as well as a pathological interest, and at least serves as an illustration of the sort of lesion that may be found associated with this grouping of symptoms.

The patient was a man, aged 61, and he was under observation from 23rd January till his death, on 17th February 1909. He was sent to me by Dr Ernest Thomson as suffering from an aphasic condition, and with a note to the effect that there was no lesion of the media or in the fundus of either eye, but that there was apparently some defect of vision, which, however, could not be accurately tested on account of the man's inability to answer questions. No proper account of the onset of the illness could be obtained from the patient himself, but the following history was supplied by his sister. It seems that since the beginning of January he had complained of defective vision and of pains in the head. His memory, too, had been failing. He could not tell the day of the week, and he could not recognise streets which formerly were familiar to him, and, consequently, he had lost his way on different occasions. It is doubtful, however, if this loss of memory for places was complete. His sister thought he did not know the use of many common objects. No history could be obtained of any previous illnesses. The patient's father died of a "stroke," and his mother from a bleeding at the nose. The family history was otherwise unimportant. The patient himself had taken alcohol in excess.

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[1] *Sem. méd.*, mai 23, 1906.

When first seen, on 23rd January, he walked quite well, and came upstairs to the ward without difficulty. There was no appearance of paralysis in the movements of the muscles of the face, eyeballs, arms or legs. The pupils were contracted and did not fully dilate when shaded from the light. The vision was estimated to be $\frac{5}{36}$ths in each eye, but the fields of vision were not taken. On admission he knew the use of some of the more common objects, for when given a cup of milk he drank the milk, but he seemed as if he did not know what he was drinking. When asked what it was there was no attempt at a reply, but if asked if it was milk he would answer in the affirmative, though he did not seem confident of the truth of his answer. He knew the use of a fork and of a spoon, but he only used the left hand to feed himself. He seemed rather dull mentally, but apparently understood what was said to him. When asked any question he would hold his hand to his head as if trying to recollect what the answer should be, and in replying he would begin the sentence well enough, but he would then forget the next words and have to stop speaking ; the condition, indeed, was an amnesia verbalis. He could count fairly well when once started, but he could not repeat the days of the week when told to do so. He seemed to have little idea of time or place, and he did not seem to recognise his relations. He could write single letters when told to do so, but he could not write words, nor could he copy letters or figures. He could not read words or even recognise letters. His hearing was quite acute.

The tendon jerks in the arms and legs were not exaggerated ; both plantar reflexes were very active, the right being extensor in type. There was no anæsthesia.

The cardiac area was within normal limits and the sounds pure. Systolic blood pressure was 160 mm. Hg. The lungs were normal, and there was neither sugar nor albumen in the urine.

The day after admission the patient seemed fairly well, and seemed to understand most that was said to him. But on the 25th January he became dull and apathetic, and neither spoke nor seemed to understand when spoken to. He was not comatose, for sensation was quite acute; the eyes were wide open and he looked wide awake. There was now noted for the first time a degree of rigidity of the right arm and right leg, but there was no definite loss of power, for when disturbed he would make quite strong voluntary movements of this arm and leg. This rigidity was more or less constantly present from this time onwards till the time of his death, though it varied in intensity a good deal from time to time. Occasionally there was also some rigidity of the left arm and leg as well. There was never absolute paralysis of the right arm or leg, but he did not move them nearly so much as the limbs of the left side. Mentally he was very lethargic after the 26th January. He lay like a log and made no attempt to speak. When spoken to he would open his eyes, and seemed to understand in a measure what was said to him, but he was really in a semi-comatose condition. There was incontinence of urine and fæces ever since admission. He was fed with fluids, and from the 26th January onwards there was some difficulty in getting him to swallow. Oral sepsis developed, and early in February an abscess in the left parotid region. This was opened on 15th September and a large amount of pus evacuated. The patient died two days later. During his residence in hospital the temperature remained almost constantly normal, being only on three occasions above 98·4°, and only once higher than 99·4°. The blood pressure ranged from 165 to 170 mm. of Hg.

The post-mortem examination of the thoracic and abdominal organs proved negative. Nothing abnormal was made out on the surface of the brain, and in particular the vessels were free from atheroma. When hardened, however, and cut in vertical sections, the lesion became at once apparent. Its topography is indicated in the three illustrations, representing sections through the brain—the first just posterior to the corpora quadrigemina, the second immediately posterior to the splenium, and the third about one and a half inches in front of the occipital pole. The lesion is a softening limited to the white matter in the posterior part of the left hemisphere, and it extends from the level of the corpora quadrigemina (where its anterior extremity can be seen lying below and to the outer side of the lateral ventricle) backwards to the grey matter of the occipital pole. The lesion increases in size as it passes backwards, occupying at its anterior part the lower and inner portion of the hemisphere, but filling up posteriorly the whole white matter of the occipital lobe. At the lower part of the softening there is a small abscess measuring four centimetres in length, two centimetres trans versely, and one and a half centimetres vertically. This abscess lies subcortical to the fourth and fifth (fusiform and lingual) temporal convolutions.

It is difficult to be certain of the pathogenesis of this lesion. Probably the abscess was first to appear, and as it is entirely subcortical it is likely to have been embolic in origin. Such purulent foci, if they exist for any length of time, lead to softening in the nerve structures round about them. But even the softening must have been of some duration, for on microscopic examination it was found to have been almost completely replaced by a fine cellular connective tissue, which, in turn, could not have taken less than several weeks to form.

No detailed microscopic examination of the brain was carried out in this case; but as far as could be seen by the naked eye the chief structures affected by the lesion were, first, the optic radiation on the left side with all the white matter subcortical to the occipital cortex. There seems no doubt that there must have been a hemianopsia. Then the white matter subcortical to the fourth and fifth temporal convolutions, to the most posterior part of the second temporal, and to the posterior parietal, also seemed affected. The fibres going to the posterior third of the angular gyrus were also probably caught by the softening.

But the white matter immediately subcortical to the first temporal and all but the most posterior part (*i.e.* the part immediately below the post-parietal gyrus) of the second temporal was unaffected. The fibres going from the left occipital lobe to the marginal and angular gyri were certainly interrupted, but those coming from the right occipital lobe, by way of the corpus callosum, seemed quite free to reach any part of the marginal gyrus and the greater part of the angular gyrus as well. Fig. 2 represents a section through the middle of the marginal gyrus, and shows the intra-parietal fissure with the supra-marginal convolution lying below it and free to communicate with the corpus callosum. Fig. 3 shows a section through the anterior part of the angular gyrus, but there is no appearance as of the softening affecting the fibres going from the corpus callosum to this convolution.

The softening, however, had apparently been producing some pressure on the surrounding structures, as may be seen from Figs. 1 and 2. In Fig. 1 the left lateral ventricle is

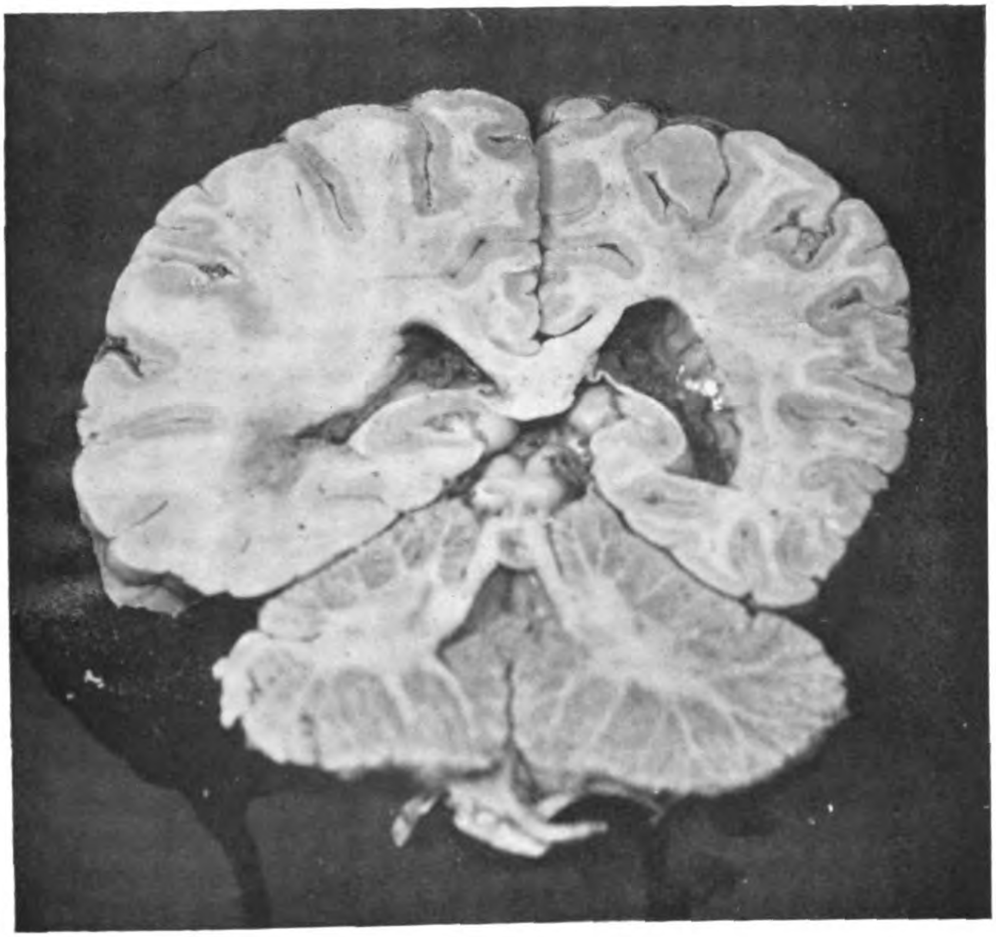

FIG. 1.

To illustrate Dr W. K. Hunter's Paper.

much smaller than the right, and in Fig. 2 the left ventricle is entirely obliterated by the pressure. It is probably this pressure, disturbing the motor pathway, that produced the rigidity of the right arm and leg noted in the report of the case.

The lesion, then, we may say, was a subcortical one isolating the occipital cortex, the posterior part of the angular gyrus, the post-parietal lobe, the most posterior part of second temporal lobe, as well as the most of the fourth and fifth temporal convolutions. The symptoms were word-blindness and letter-blindness, agraphia (except for letters), loss of memory for places and people, partial loss of memory for objects, loss of conception of time, and memory generally defective: amnesia verbalis but no word-deafness.

Now there are two theories in regard to the localisation of these functions in the cerebral cortex. The first and older one maintains that each form of speech has its own special cortical area. Thus, it is said, that the auditory word-centre is in the posterior two-thirds of the first and second temporal convolutions (some limit it to the posterior part of the first and some to the posterior part of the second convolution), and that the memory for different languages (or sounds) are stored in separate parts of this centre. The visual word-centre is said to be situated in the angular gyrus, or in the angular gyrus and part of the supramarginal gyrus, and the memory of the appearance of letters or figures to be located in a separate part of this centre from the memory for words. Likewise, the centre for object-seeing is said to be situated "posterior to the angular gyrus," chiefly in the "third and fourth occipital convolutions. The area for object-seeing is a large one, capable of ultimate sub-division into such sub-areas as centres for geometric and architectonic forms, for persons, natural objects, and places. It probably extends in its entirety from the second to the fifth occipital convolutions, including the caudal extremities of the adjoining temporal convolutions" (Mills).[1]

The other theory, that propounded by Pierre Marie, is to the effect that there is only one speech centre diffusely located in the left temporo-parietal region, and that this is a centre specialised for language rather than a cougeries of ganglion cells storing sensory memories. Marie maintains that there is no satisfactory evidence in favour of the separate localisation in this centre of visual speech from auditory speech, and that such a localisation is denied by everyday experience. He holds that, as a rule, the brain acts as a whole, and that the individual centres of the brain have no separate action. Thus a limited lesion in the speech centre produces a general disturbance of speech—just as it produces a disturbance of intelligence—rather than a loss of an isolated part of speech. No doubt a lesion in the speech centre may affect one part of speech more than another, *e.g.* visual speech when auditory speech is unaffected; but it is usually the speech most recently acquired that is first to disappear, so that visual speech is more often lost than auditory speech, and a foreign language than one's mother tongue. According to this theory a small lesion affects the function of the whole speech area, and affects it in proportion to the size of the lesion. Alexia, for instance, would be produced by a lesion in any part of the speech centre, lowering the function of this centre, rather than by a lesion limited to a special part of the speech centre set apart for reading.

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[1] *Univ. of Penna. Med. Bul.*, May 1904.

Marie likewise regards defects of memory for places and things as defects of the general intelligence, and not as defects of a special centre. He is, therefore, against the strict and narrow localisation of functions in the cerebral cortex.

The question then arises as to which of these two theories will best explain the findings in this case I have just recorded. According to the first theory the word- and letter-blindness should have been associated with a complete lesion in, or complete isolation of, the angular and supramarginal gyri, and the partial object blindness with a partial lesion in the region posterior to the angular gyrus. But, as we have seen, a different state of matters was found post-mortem, for there was apparently complete isolation of the occipital region, and no evidence of more than a partial isolation of the angular gyrus. It would seem, then, that Marie's theory more readily suits this case, the word- and letter-blindness, the partial object-blindness, the agraphia and amnesia verbalis being regarded as due to a lesion isolating or "disturbing," by pressure or otherwise, a speech centre in the left temporo-parietal cortex.

It is not claimed that this case can be regarded as certain evidence of there being no word-seeing centre in the angular and supra-marginal gyri, for the fact that there were signs of irritation of the motor pathway shows there was probably some pressure from the lesion in a forward direction, and it seems reasonable to think that there may have been pressure in an upward direction as well. In this way the fibres subcortical to the hypothetical higher visual centre might have been disturbed, and sensory stimuli therefore fail to reach this centre.

But the case seems to negative somewhat the view of there being a localisation of object and place memories limited to the region posterior to the angular gyrus, for this area was entirely isolated from the centres of lower vision in both hemispheres, and yet the loss of object memory at least was by no means complete.

One other point I must note is that there was no recent lesion found which would account for the change in the symptoms which set in on 26th January, and continued up till the time of death. The softening was entirely replaced by a fine granulation tissue which, I take it, was at least four weeks old, and must, therefore, have existed when the patient first came under observation. The explanation of this change in symptoms is not very obvious, but a lesion of the size of the one present in this case must, one would think, sooner or later, by its mere presence, have an inhibitory action on the higher functions of the cerebrum.

Description of Figures.

Fig. 1.—Vertical section of brain immediately posterior to corpora quadrigemina. Shows anterior limit of softening external to the lateral ventricle.

Fig. 2.—Vertical section of brain posterior to splenium of callosum. Shows softening obliterating lateral ventricle, and the abscess in the lower part of the softening.

Fig. 3.—Vertical section of left hemisphere one and a half inches in front of occipital pole. Shows softening and posterior end of abscess.

A NOTE ON THE OCULO-AURAL ASSOCIATED MOVEMENT.

By HUGH S. STANNUS, M.B., L.R.C.P., M.R.C.S.,
Medical Officer, Nyasaland Protectorate.

UNDER the heading "A Note on an Associated Movement of the Eyes and Ears in Man," attention was drawn by Dr S. A. K. Wilson, in the *Review of Neurology and Psychiatry* for June 1908, to involuntary associated movements of the pinnæ when the eyes are deviated strongly to one or other side. The movement consists in a curling back of the helix about its middle part as the eyes reach the extreme lateral position, as if to open the meatus wider for the purpose of catching a faint sound. Dr Wilson found the movement present in 40 per cent. of fifty normal individuals examined. The muscle actuating such movements is the transversus auriculæ, a little sheet of muscle on the posterior aspect of the pinna, innervated by a twig from the seventh cranial nerve. This muscle, as he points out, is well developed in the anthropoid apes, and he suggests that in this functional connection of the transversus auriculæ with conjugate deviation of the eyes we have a remnant of an associated movement that is of widespread occurrence among the lower vertebrates.

It occurred to me that a series of observations concerning the oculo-aural movements in one of the more primitive races of mankind might be of interest, in that *a priori* one might expect these movements to be more commonly present among them than among Europeans.

This proved to be the case, though in one noticeable point my findings differ from those of Dr Wilson.

The subjects of the observations were natives of Nyasaland (Central Africa) belonging to several tribes of the Bantu family. One hundred healthy males taken haphazard were tested in the way suggested by Dr Wilson; of these, in thirty-four no movement of the pinna was detected, but the remaining sixty-six, 66 per cent., showed movements of one or other pinna, or both, as noted below.

Seven men showed synchronous movements of the homolateral and the heterolateral helix on looking to the right and on looking to the left, all four movements being equal.

A further eighteen showed synchronous movements of both pinnæ, the heterolateral movement in each case being greater than the homolateral.

In twenty-eight movement of the heterolateral pinna only was observed, that is, of the left pinna with deviation of the eyes to the right, and of the right pinna with deviation of the eyes to the left.

A single case showed movements of the homolateral and heterolateral pinnæ on looking to the right or left, the movement of the left pinna on deviation of the eyes to the right being greater than the other movements, which were equal.

In another case a similar result was obtained, the excursion of the right pinna on looking to the left being greater than the other three movements, which were equal.

No movement of the right pinna on looking to the right was noted in a third case, the other three movements being present and equal.

A fourth variation, seen in a single case, consisted in equal movements of the heterolateral pinna on looking to the right or left, each being greater than the homolateral movement on looking to the right. On looking to the left the homolateral movement was absent.

Movement of the heterolateral pinna on conjugate deviation to the right was the only movement noted in four cases, and on conjugate deviation to the left in three others.

There remain two other cases, each showing but two movements: in the first, movement of the left (heterolateral) ear on looking to the right, and of the same (homolateral) ear on looking to the left; in the second, movements of the two pinnæ on looking to the right.

If we analyse these results, we find that in twenty-seven of the sixty-six cases, or 41 per cent., there were synchronous movements of both pinnæ on looking to the right or left. Dealing with each pinna separately, of the one hundred and thirty-two instances we note that in one hundred and five the excursion of the helix was greater when the eyes were directed to the opposite side than when they were directed to the same side; in other words, in 79 per cent. movement of the heterolateral pinna was the greater, while in twenty-six, or 19·7 per cent., the movements of the two pinnæ were equal, or one or other was absent. In only one case was the movement of the homolateral pinna greater than that of the other side (case in which on looking to the left movement of the left pinna was noted, with no movement of the right).

In a comparison of these figures with those of Dr Wilson it will at once be seen that the phenomenon under consideration is more frequently met with among the natives of Nyasaland than among Europeans, 66 per cent. as compared with 40 per cent.; the movements are also more complete, or less rudimentary, among the former.

In dealing with what one may call a primitive movement, using the adjective in a particular sense, I think it is fair to assume that races lower in the scale of civilisation will show that movement in greater perfection, and therefore conclusions drawn from the result of their examination are perhaps more likely to be nearer the truth. In Dr Wilson's series of cases a homolateral movement was obtained from either side in 26 per cent., whereas my own observations point to the heterolateral movement being the more constantly present and the greater in amplitude (79 per cent.), in 19·7 per cent. being equal and in one single instance less. Dr Wilson noticed that in his five cases which gave a homolateral movement from either side, and in addition showed a synchronous heterolateral movement, the latter was greater than the former.

This is really what one might expect; the complete movement-complex in response to an auditory stimulus is, I suggest, deviation of the head (body) and eyes to one or other side, and with this the pinna of the same side is curled back to enlarge the meatal opening and thus aid in catching the sound, while the pinna of the opposite side is curled back to a greater degree to counteract the turning of the head, and thereby also aid in catching the sound. It is a noteworthy fact in support of this view that the head is moved only slightly when an attempt is made to detect a faint sound; the ear on the off side is therefore not put out of action, and the greater movement of this ear is of real service.

Abstracts

PHYSIOLOGY.

BRAIN AND SYMPATHETIC. (Gehirn und Sympathicus.)

(626) Karplus and Kreidl, *Pflüger's Archiv*, Bd. 129, H. 3, 4, and 5, p. 138, 1909.

A relation has been found, by electrical stimulation, between an area at the base of the midbrain and the sympathetic system. The electrodes are placed laterally to the infundibulum immediately behind the optic tract, between it and the oculomotor nerve, and the effect of stimulation is observed upon the eye. Maximal dilatation of the pupil is constantly produced in both eyes, widening of the eyelid fissure, and retraction of the nictitating membrane. With a very weak current the action is prompter on the opposite eye than on that of the same side. Application of cocain to the seat of stimulation abolishes the effect. If the area on one side is destroyed, the opposite pupil remains narrow.

After section of one cervical sympathetic nerve no effect on the eye of that side is obtained by stimulation of the opposite area, while the eye on the stimulated side responds as promptly as before. Neither eye responds when both nerves are cut.

The typical results are not obtained by applying to adjacent parts stimuli of the same strength as is effective on the area described. Removal of the brain to such an extent that only a small part of the midbrain remains in connection with the crura does not abolish the response, which, however, disappears when the crus on the stimulated side is cut. It has not been decided with certainty whether a centre has been excited or paths which pass under the stimulated area, but the former is more probable.

W. A. Jolly.

SOME REMARKS ON MICHAILOW'S ACCOUNT OF THE COURSE TAKEN BY SYMPATHETIC NERVE FIBRES.

(627) Langley, *Zentralbl. f. Physiol.*, No. 11, Bd. 23, 1909, S. 344.

The method used by Michailow, and described by him in a recent paper, is untrustworthy, and his results show that when it is used degeneration or apparent degeneration may be found of nerve fibres which have no connection with the nerve fibres cut. Michailow finds that the sympathetic of one side sends fibres into the spinal cord by way of the anterior and posterior roots, and that the fibres continue their course in various tracts in all three columns of the cord. It has been found, however, that section of the anterior roots themselves causes no degeneration in the cord, and that section of the posterior roots causes little, if any, except in the homolateral posterior column and in Lissauer's tract. Thus section of the roots does not cause the degeneration described by Michailow.

The teasing method is free from the drawbacks attending the method used by Michailow, and his belief that degenerated nerve fibres after treatment with osmic acid are too fragile to be teased is a pure illusion. W. A. JOLLY.

THE INFLUENCE OF CALCIUM UPON THE PUPIL AND (628) THE PUPILLOMOTOR FIBRES OF THE SYMPATHETIC NERVE.

JOHN AUER and S. MELTZER, *Amer. Journ. of Physiol.*, Vol. xxv., No. 11, Oct. 1, 1909.

THE authors have found that intravenous injections of calcium chloride cause a maximal contraction of the pupils, which may be complete before other signs of calcium intoxication are manifested, and which may last for over an hour after discontinuance of calcium injection. With the development of the myosis the pupil loses its responsiveness to light, and the palpebral aperture becomes stationary and wider. Calcium also greatly reduces the irritability of the pupillomotor fibres of the cervical sympathetic nerves, an effect probably independent of the production of myosis.

Atropin, cocaine, adrenalin (in ganglionectomised animals), ether, and asphyxia each neutralise this effect of calcium only to a limited degree. The authors conclude that this myosis is due to a stimulation by calcium of the muscle of the constrictor of the pupil, and probably also of its motor nerve terminals.

J. A. GUNN.

PATHOLOGY.

CONTRIBUTIONS TO THE STUDY OF THE DEVELOPMENTAL (629) DISORDERS OF THE BRAIN. (Beiträge zum Studium der Entwickelungskrankheiten des Gehirns.)

P. RONDONI, *Arch. f. Psych.*, Bd. 45, Ht. 3.

IN the first half of this lengthy communication the author discusses juvenile general paralysis and related processes, and the double part which hereditary syphilis plays in preparing the soil and in directly causing these disorders. He reports three cases in which the histopathological changes of general paralysis were present the first two patients presented a marked degree of idiocy, the third appeared normal until the age of sixteen. In addition to the histopathological changes of general paralysis, the brains presented interesting developmental anomalies which are reported in considerable detail. The author concludes that in such hereditary syphilitics, before actual development of the syphilitic or metasyphilitic disorder the brain presents evidence of marked developmental disorder or arrest.

In the second part the author discusses the process of the stratification of the cerebral cortex under normal and pathological conditions. In idiocy, where there is arrested or abnormal cortical development, the central convolution shows more or less preservation of the embryonic type with indications of the transitory six-layer type of arrangement, a well-marked granular layer, disorder of the supra-granular pyramidal layers which have a high psychic function, faulty development of the giant pyramidal cells, and of the super-radial network of fibres. C. MACFIE CAMPBELL.

A NOTE ON THE PATHOLOGY OF LEAD POISONING. K. W. (630) GOADBY and F. W. GOODBODY, *Lancet*, Oct. 2, 1909, p. 988.

IT is well known that the greatest variation has been noted in the pathological records of cases of lead poisoning. The authors have made numerous experiments on cats, principally by inhalation of lead compounds, but also by hypodermic injection and feeding, and they consider that this variation is consonant with what they believe to be the primary effect of lead intoxication—viz., microscopical hæmorrhages affecting practically all the tissues of the body, as well as the nervous system, central and peripheral. The presence of those minute hæmorrhages in the nervous system explains many of the varied findings and the clinical symptoms of lead palsy, and its good prognosis when treated early is explained by the localisation of the minute hæmorrhages in the peripheral nerves. J. H. HARVEY PIRIE.

PSYCHOLOGY.

REPORT OF A CASE OF PSYCHO-CHROMÆSTHESIA. T. H. (631) RAINES, *Journ. of Abnorm. Psychol.*, Oct.-Nov. 1909, Vol. iv., p. 249.

THE writer gives a short description of the case of a woman, aged 30, who is a spiritistic medium, and who presents many psycho-chromæsthesic phenomena (coloured thinking). Various mental processes evoke visual pictures, of different shapes and colours.

The common form of synaesthesia, *audition colorée*, was also present in this case. No new points were elucidated.

Ernest Jones.

CONTRIBUTION TO THE PSYCHOLOGY OF GENERAL PARESIS.

(632) Schmiergeld, *Journ. of Abnorm. Psychol.*, Oct.-Nov. 1909, Vol. iv., p. 253.

A series of tests was instituted in ten cases to determine the patient's capacity of estimating distance, time duration, and financial value of objects. Of these, the second one showed the most errors. Errors were just as frequent in the cases without megalomaniac delusions as in those with them, and no relationship could be traced between these delusions and the capacities in question.

Ernest Jones.

CERTAIN PULSE REACTIONS AS A MEASURE OF THE EMOTIONS.

(633) Coriat, *Journ. of Abnorm. Psychol.*, Oct.-Nov. 1909, Vol. iv., p. 261.

It has for some time been known, particularly thanks to Jung's exact researches, that the arousal of an emotionally-toned complex of ideas by a test word used in the association experiment is accompanied by changes in the electrical conductibility of the body (psycho-galvanic reflex). This is probably due to an alteration in the sweat secretion. Coriat here maintains that simultaneous changes occur in the pulse-rate. This is best tested by first inducing a state of distraction by means of the monotonous sound of a metronome. In this the subject's pulse-rate falls, and soon becomes steady. Mental exercises will then cause no alteration in the rate, nor will the application of indifferent test words. Test words, however, which are associated with emotional complexes cause a rise of about ten to twenty beats. The stronger is the complex toned the more quickly does this rise occur. He illustrates the point by short accounts of eight selected cases.

Ernest Jones.

PSYCHO-PHYSICAL INVESTIGATIONS WITH THE GALVANOMETER.

(634) Peterson and Scripture, *Journ. of Nerv. and Ment. Dis.*, July 1909, p. 426.

The authors confirm the work of Jung and other observers as to the influence of emotional disturbances on the electrical resistance of the body, and agree with him that the seat of the change in this resistance is the sweat glands.

Ernest Jones.

CLINICAL NEUROLOGY.

A CONTRIBUTION TO OUR KNOWLEDGE OF THE CONJUGAL (635) AND FAMILIAL SYPHILOGENOUS DISORDERS OF THE NERVOUS SYSTEM. (Zur Kenntnis der Konjugalen und familiären syphilogenen Erkrankungen des Zentralsystems.)

E. MEYER (of Königsberg), *Arch. f. Psych.*, Bd. 45, Ht. 3.

A RATHER modest contribution to an important subject. In twenty-eight cases of general paralysis, tabes, cerebral syphilis, and other similar disorders, in which it was possible to examine the husband, wife, or other relatives of the patient, there was found eight times evidence pointing to disease of the nervous system of similar nature. In several other cases there was well-justified suspicion of such a disorder. Other organs than the nervous system were also affected in several cases, so that the author does not consider justified the assumption of a special form of syphilis with predilection for the nervous system. C. MACFIE CAMPBELL.

LATE HEREDITARY SYPHILIS. (Syphilis héréditaire tardive.)

(636) POULARD, *Progrès méd.*, 1909, p. 525.

POULARD was consulted by two sisters, whose history recalls the cases recently recorded by C. Müller (*v. Review*, 1909, p. 53). One was a married woman, aged 50, with a gumma of the frontal bone, and the other was a virgin, aged 36, suffering from tabes. The intelligence of the younger sister had always been below normal, and during childhood she had had osteitis of the os calcis and inferior maxilla. J. D. ROLLESTON.

ON PROGRESSIVE NEURAL MUSCULAR ATROPHY. (Beitrag (637) zur neuralen progressiven Muskelatrophie.)

K. v. KÜGELGEN (of St Petersburg), *Arch. f. Psych.*, Bd. 45, Ht. 3.

AFTER reviewing the various groups of muscular atrophy, the author reports a case of the progressive neural type. The patient was a woman of 25, with weakness of the four extremities, flat-foot, claw-hand, diminution of the muscular reaction to both the galvanic and the faradic stream, reaction of degeneration, fibrillary tremor of the muscles, earlier involvement of the extensors than of the flexors. Anomalous features were the absence of any vasomotor or sensory disorder, the absence of the familial occurrence of the disease, the involvement of the trunk muscles, the pseudo-hypertrophy of the leg muscles, the greater involvement of the foot muscles than of the toe muscles. A bibliography of sixty references is given. C. MACFIE CAMPBELL.

ON A CASE OF PROGRESSIVE NEURAL MUSCULAR ATROPHY (638) WITH MANIC-DEPRESSIVE INSANITY AND SO-CALLED MALADIE DES TICS CONVULSIFS; WITH POST-MORTEM EXAMINATION. (Über einen Fall von progressiver neurotischer (neuraler) Muskelatrophie mit manisch-depressivem Irresein und sogenannter Maladie des tics convulsifs einhergehend.) A. Westphal, *Arch. f. Psych.*, Bd. 45, Ht. 3.

At the age of twelve, the patient suddenly had an atrophic paralysis of the leg after convulsions; the muscular weakness was progressive, and spread to the distal segments of the upper extremities. Later, mental symptoms developed and peculiar movements in various groups of muscles. In 1904, at the age of forty-five, the patient presented the following symptoms:—Diminished tendon reflexes, marked diminution of the electrical reaction, no sensory disorder, nasal speech, fibrillary tremor in the tongue, tic-like, choreiform and athethoid movements; the mental picture was that of manic-depressive insanity. Death in 1907.

Anatomically: degeneration of the posterior columns, atrophy of the anterior cornual cells and of the cells of Clarke's column throughout the whole extent of the cord, marked atrophy of the hypoglossal nucleus on one side, less marked on the other, an old focus of poliomyelitis in the upper sacral cord, heterotopia of the grey matter in the posterior column region of the lumbar cord, neuritic changes in the peripheral nerves, fatty degeneration of the atrophic muscles.

The author discusses in detail the clinical symptoms and anatomo-pathological data, and refers to other cases in the literature. C. Macfie Campbell.

COMBINED BILATERAL SERRATUS PARALYSIS FOLLOWING (639) TYPHUS. (Ein Fall von doppelseitiger combinierte Serratuslähmung nach Typhus.) T. O. Schabad, *St Petersburg. med. Woch.*, 1909, p. 207.

A man, aged 28, five days after the crisis in typhus fever, developed bilateral paralysis of the serratus magnus, supraspinatus, and infra-spinatus. Electricity and massage producing no improvement, Schabad proposed to adopt the method of transplantation of muscles, which had been recently employed with success by Samter and Katzenstein. J. D. Rolleston.

SYPHILITIC POLYNEURITIS. (Ueber Polyneuritis syphilitica.)
(640) H. STEINERT, *Münch. med. Woch.*, 1909, pp. 1938 and 2010.

AFTER a critical review of the literature and the record of two personal cases, Steinert arrives at the following conclusions:—1. Syphilitic polyneuritis does exist. 2. It occurs most frequently during the early secondary stage. In most cases specific manifestations in the skin or mucous membranes are also present. 3. The occurrence of syphilitic polyneuritis in the tertiary stage cannot be regarded as proven (but *cf. Review*, 1909, p. 267, J. D. R.). 4. The prevalent belief that polyneuritis in syphilis is usually due to mercury is unfounded, since mercurialism does not produce polyneuritis except in very severe cases. 5. The symptoms are those of ordinary polyneuritis. Perhaps the upper extremities are more frequently involved than in other cases. Pseudo-tabes is strikingly frequent. 6. The prognosis is not absolutely favourable, for some cases run a malignant course. As a rule, however, there is complete recovery. 7. The pathological anatomy is the same as in other forms of polyneuritis. 8. Energetic mercurial treatment is indicated. A bibliography of 137 references is appended.

J. D. ROLLESTON.

CASE OF CHRONIC INFANTILE PARALYSIS OF TEN YEARS' (641) STANDING: TREATMENT: RESULT.
F. HERNANAN-JOHNSON. *Brit. Med. Journ.*, Oct. 16, 1909, p. 1118.

THE case illustrates how, after even ten years, treatment may considerably improve the condition. The patient was a girl of 14, with a marked paralytic talipes equino-varus, and shortening of the whole left lower limb. Operative measures were refused, but steady use of massage, electricity, and mechanical vibration for some months gave good results in the hip and thigh muscles, and a well-designed boot considerably improved matters as far as the leg and foot were concerned. J. H. HARVEY PIRIE.

HEREDITARY SPASTIC PARAPLEGIA. REPORT OF SEVEN (642) CASES IN TWO FAMILIES.
PUNTON, *Journ. of Nerv. and Ment. Dis.*, Oct. 1909, p. 588.

THE cases are typical instances of simple spastic paraplegia. In the first family the mother (aged 59) and the three sons (aged 34, 32, and 24 respectively) were affected; there were no other children. The complaint began in the mother at the age of twenty-four, in the sons at the age of sixteen. In the second family the mother (aged 43) and two daughters (aged 7 and 5 respectively) were affected, the only other child, a boy of 10, was healthy. The complaint began in all in the first few years of life. A sister of the mother was also said to be similarly affected.

ERNEST JONES.

THROMBOSIS OF THE CERVICAL ANTERIOR MEDIAN SPINAL ARTERY; SYPHILITIC ACUTE ANTERIOR POLIOMYELITIS.

(643) SPILLER, *Journ. of Nerv. and Ment. Dis.*, Oct. 1909, p. 601.

SPILLER gives a full description of this interesting case. The patient, a man whose age is not stated, suddenly underwent an attack of pain in the back, with numbness and loss of power in all four limbs. Partial recovery followed. The sphincters were affected and marked sensory disturbances were present. A diagnosis of hæmatomyelia was made, but at the autopsy three years later the condition was found to be due to a localised thrombosis of the anterior median spinal artery. ERNEST JONES.

FLACCID PARALYSIS OR EXTREME HYPOTONIA OF THE MUSCLES WHICH POISE THE HEAD, AND OTHER SYMPTOMS INDICATIVE OF A CEREBELLAR TUMOUR.

(644) C. K. MILLS, *Journ. of Nerv. and Ment. Dis.*, July 1909, p. 402.

THE patient, a girl of 8, had for a year suffered from fainting attacks; other symptoms were spells of dizziness, vomiting, and headache. For six months she had been unable to hold her head up. On examination it was found that she had optic neuritis, exaggerated deep reflexes with bilateral extensor response, and a general paralysis of trunk and limbs; these were hypotonic. The most striking feature in the case was the completeness of the paralysis of the neck muscles. The patient died, but no necropsy could be obtained. ERNEST JONES.

A NEW SIGN IN MENINGITIS. (Un signe nouveau sur les membres inférieurs dans les méningites chez les enfants. Signe de la nuque.)

(645) BRUDZINSKI, *Arch. de med. des Enf.*, Oct. 1909, p. 745.

THIS sign consists in the following:—When the neck is passively flexed anteriorly the lower limbs become flexed on the pelvis and at their various joints.

This sign the author has never noted in healthy children or in children sick with other complaints than meningitis, and in forty-two cases of various kinds of meningitis this sign was positive in 97 per cent. A. DINGWALL FORDYCE.

EPIDEMIC CEREBRO-SPINAL MENINGITIS IN PARIS. J. D.
(646) ROLLESTON, *Brit. Journ. Child. Dis.*, Oct. 1909, p. 462.

A REVIEW of recent papers by Netter, Dopter, and other French authorities on the epidemic of cerebro-spinal meningitis in Paris during the first six months of this year.

AUTHOR'S ABSTRACT.

THE SENILE TYPE OF EPIDEMIC CEREBRO-SPINAL MENINGITIS. (Der senile Typus der übertragbaren Genickstarre.)
(647) F. REICHE, *Münch. med. Woch.*, 1909, p. 1829.

REICHE agrees with Schlesinger (*v. Review*, 1908, p. 417) in regarding an absence or slight degree of nuchal rigidity and a comparatively low temperature as characteristic of epidemic cerebro-spinal meningitis occurring in advanced life. The rarity of the disease in old age is shown by the fact that out of 144 cases notified in Hamburg between 1905 and 1908 only two were over sixty. One was a woman, aged 61, in whom the disease started with left hemiplegia. She had no opisthotonos nor nuchal rigidity, but only a slight painfulness of the neck muscles, which developed shortly before death. The case was recorded by the author at the Hamburg Medical Society (*v. Neurol. Centralbl.*, 1908, p. 490) as illustrative of focal symptoms in diffuse brain disease, naked-eye and microscopical examination showing no peculiarities of the right motor centres to explain the left hemiplegia. The other case was a man, aged 61, in whom the diagnosis of epidemic cerebro-spinal meningitis was not made until the autopsy, the symptoms having been disguised by fracture of the skull, chronic nephritis, and bronchitis. In both cases Kernig's sign was present, but, unlike Schlesinger's cases, neither showed any herpes.

J. D. ROLLESTON.

A CASE OF HYSTERICAL MUTISM. LESZYNSKY, *Journ. of Nerv. and Ment. Dis.*, July 1909, p. 419.
(648)

THE patient, a man of 52, lost his speech seven months ago, after a day or two of a stage in which it was stammering. No other aphasic symptoms were present, and no signs of either organic or functional disease except ankle clonus. The writer gives no reason for the diagnosis. ERNEST JONES.

THE DIFFERENTIAL DIAGNOSIS OF GRAVE HYSTERIA AND ORGANIC DISEASE OF THE BRAIN AND SPINAL CORD, ESPECIALLY DISEASE OF THE PARIETAL LOBE.

(649) C. K. MILLS, *Journ. of Nerv. and Ment. Dis.*, July 1909, p. 407.

THE patient, a man of 47, had suffered from a stroke, with paralysis on the left side, two days before admission. On examination he had slight weakness of the limbs and face on the left side, left-sided hypoaesthesia, double Babinski sign and increased deep reflexes. The left limbs were ataxic. The patient improved considerably; the case was considered one of disease of the parietal lobe. Mills incidentally makes the certainly unwarranted statement that astereognosis, word-deafness, and word-blindness do not occur in hysteria. ERNEST JONES.

TRAUMATIC HYSTERIA IN ITS RELATION TO SURGERY.

(650) B. C. LOVELAND, *Med. Rec.*, Aug. 14, 1909.

THE object of the paper is simply to call attention to the not infrequent relation that exists between surgical procedures and hysteria of the traumatic type. The author instances five cases of hysteria or neurasthenia developing after surgical interference. Two cases are described in some detail, one of which showed a certain degree of astasia abasia. D. K. HENDERSON.

PSYCHASTHENIA.

(651) A. H. RING, *Boston Med. and Surg. Journ.*, Aug. 5, 1909.

JANET includes under this term obsessions, manias of doubt, tic, agitations, phobias and the deliria of contact, states of anxiousness, neurasthenias and bizarre sensations of strangeness and depersonalisation.

The peculiar thing about the condition is that the patient is perfectly well aware of the inconsistency of his obsession or phobia, and can frequently be argued out of it for a time, though it soon returns. It is this ability to see the fixed ideas in their real setting and to discuss them impartially which at once differentiates obsessions and phobias from the delusions of the deeper psychoses. Psychasthenia has to be differentiated from hysteria, epilepsy, dementia præcox, manic-depressive insanity and paresis. In regard to differentiating it from hysteria, it is pointed out that the psychasthenic does not exhibit those rapid cyclonic changes of temperament so characteristic of hysteria, but shows persistent depression, indecision, doubt or fear. In psychasthenia also there is no suggestion of a substitutive reaction, whereas hysteria may be looked upon, not as a disease, but as a type whose characteristic is substitutive reaction.

The treatment should be largely prophylactic and educational, while explanation, persuasion, and encouragement are the most profitable forms of psychotherapy to employ.

D. K. HENDERSON.

OBSESSIONS AND ASSOCIATED CONDITIONS IN SO-CALLED (652) PSYCHASTHENIA.

J. E. DONLEY, *Journ. of Abnorm. Psychol.*, June-July 1909, p. 171.

DONLEY holds the view that obsessions arise as a logical persistence of a similar feeling once actually experienced in some disagreeable, and perhaps forgotten, circumstance. He uses no special procedure to determine the actual origin of them, but merely inquires into the history. He treats such cases by persuasion and suggestion. Five cases are shortly narrated.

ERNEST JONES.

EXHAUSTION OF THE KNEE AND ANKLE JERKS. (REACTION (653) OF EXHAUSTION.) (Sur l'épuisement des réflexes achilléens et rotuliens.) (Réaction d'épuisement.)

OBREGIA and A. SHUNDA, *C. R. Soc. de Biol.*, 1909, lxvii., p. 147.

NORMALLY a great many percussions are required to produce fatigue and disappearance of a reflex, but in certain pathological conditions after the third or fourth tap there is an obvious diminution of the response, which by the eighth or ninth tap is entirely abolished. This reaction of exhaustion, which is the equivalent in tendons of the myasthenic reaction in muscles, was found by the authors in tabes, general paralysis and cerebrospinal syphilis. In some cases the reaction was confined to one side, while on the other the reflexes were either normal or completely abolished. Subsequent examination showed either restoration of their normal activity or else complete abolition of the reflexes.

J. D. ROLLESTON.

THE DIAGNOSTIC AND PROGNOSTIC SIGNIFICANCE OF (654) TENDON AND SKIN REFLEXES IN NEPHRITIS AND URÆMIA. (Über die diagnostische und prognostische Bedeutung der Sehnen- und Hautreflexen bei Nephritis und Urämie.)

H. CURSCHMANN, *Verhandl. des Kongresses f. inn. Med.*, 1909, p. 341.

CURSCHMANN thinks that more attention should be given to the tendon and cutaneous reflexes in nephritis. Their almost invariable exaggeration in threatening uræmia is a danger signal which may be of diagnostic and prognostic value in cases in which the other symptoms of uræmia are latent. Two illustrative cases are recorded :—

1. A man, aged 40, in addition to the classical signs of contracted kidney, showed enormous exaggeration of all his tendon reflexes, bilateral ankle clonus, and left Babinski. In spite of his euphoria the diagnosis of threatening uræmia was made. Before appropriate treatment could be carried out, death from uræmia took place in twenty-four hours.

2. A boy, aged 6 years, suffering from post-scarlatinal nephritis, showed exaggeration of all his tendon reflexes, especially on the left side, on which he had knee and ankle clonus and Babinski's sign. The cutaneous reflexes were present, but not exaggerated. In spite of his good general condition the diagnosis of uræmia was made, and in the next few hours twitchings of the left side took place. Phlebotomy and saline infusions were employed with success, and on the following day the exaggeration of the reflexes had disappeared.

J. D. ROLLESTON.

HEREDO-SYPHILITIC PARALYSIS OF THE OCULO-MOTOR (655) NERVE. (Paralysie hérédo-syphilitique du moteur oculaire commun.)

E. GINESTOUS and R. CAMPANA, *Gaz. hebd. des sci. méd. de Bordeaux*, 1909, p. 510.

THE patient was a girl, aged 13, the illegitimate daughter of a mother who had had six miscarriages and a living child who had died at twenty-two months from meningitis.

On the right side the paralysis affected the levator palpebræ, superior rectus and intrinsic muscles, the pupil being dilated and reacting feebly to light and accommodation. On the left side the levator palpebræ was the only muscle affected. The bilateral character of the ptosis at first suggested an hysterical origin, but treatment appropriate thereto had no effect. Antisyphilitic treatment, on the other hand, was followed by rapid improvement and complete recovery. The paralysis was probably of nuclear origin.

J. D. ROLLESTON.

SUDDEN AMAUROSIS IN TYPHOID FEVER. PAPILLARY (656) ŒDEMA, HYPERTENSION OF THE CEREBRO-SPINAL FLUID. RAPID RECOVERY AFTER LUMBAR PUNCTURE. (Amaurose subite au cours d'une fièvre typhoïde. Œdème de la papille, hypertension du liquide céphalo-rachidien. Guérison rapide après la ponction lombaire.)

WIDAL, JOLTRAIN and A. WEIL, *Bull. et mém. de la Soc. méd. des Hôp. de Paris*, xxviii., 1909, p. 366.

A MAN, aged 20, who had had no previous ocular trouble, awoke completely blind on the ninth day of an attack of typhoid fever.

Examination on the following day showed bilateral papillary œdema with marked venous dilatation. Lumbar puncture gave issue to a clear fluid under hypertension without cellular contents. Rapid improvement in vision followed. A second puncture was performed two days later, when the hypertension was much less. In another four days the fundi were quite normal. Death, preceded by intestinal hæmorrhage, took place nine days later. The blood pressure was subnormal throughout the attack, so that this case must be distinguished from those forms of amaurosis occurring in certain intoxications, especially plumbism, and attributed by Vaquez to arterial hypertension. J. D. ROLLESTON.

PSYCHIATRY.

A CASE OF JUVENILE GENERAL PARALYSIS.

W. H. (657) HOUGH, *Journ. of Nerv. and Ment. Dis.*, Oct. 1909, p. 577.

HOUGH relates in detail the clinical and pathological condition in a very typical case of this disease. The patient, a girl of 17, showed other evidences of syphilis, as did the two brothers and the mother. ERNEST JONES.

REMISSIONS IN GENERAL PARALYSIS.

M. J. KARPAS, *N.Y.* (658) *Med. Journ.*, July 17, 1909.

THE author quotes numerous authorities, and tabulates a number of their results. From these results it is seen that remissions lasting over three or four years are exceedingly rare. The expansive and agitated forms are the ones which show remissions more frequently, and as a rule they appear early in the disease before the dementia has developed very far. Out of a series of seventy female paretics, the author has only seen three in whom an unquestionable remission has occurred. These three cases are fully reported. Two were of the tabetic, the third was of the cerebral type. Two were elated and grandiose, and one showed a definite depression with general slowness in action and thought. The remissions were of one year, two years, and over five months' duration respectively.

D. K. HENDERSON.

DEMENTIA PRÆCOX AFTER THIRTY YEARS OF AGE. (Dementia praecox jenseits des 30 Lebensjahres.)

(659) A. ZWEIG (of Königsberg), *Arch. f. Psych.*, Bd. 44, p. 1014.

THE author gives in condensed form the histories of eighteen patients. His conclusions are:—1. Dementia præcox may have its onset at any age. 2. The symptoms are essentially the same whatever the age of onset. 3. The prognosis is rather better in cases with late onset. 4. There is no sufficient ground for creating a group dementia tardiva. C. MACFIE CAMPBELL.

TREATMENT.

SUCCESS OF CALCIUM CHLORIDE AS A PROPHYLACTIC (660) AGAINST ERUPTIONS AFTER SUBCUTANEOUS INJECTION OF SERUM. LESS SATISFACTORY RESULTS IN INTRA-ARACHNOIDAL INJECTIONS. (Efficacité du chlorure du calcium comme moyen préventif des éruptions après injection sous-cutanée de sérum. Effets moins satisfaisants dans les injections intra-arachnoidiennes.) A. NETTER, *C. R. de la Soc. de Biol.*, lxxvii., 1909, p. 186.

NETTER found that though calcium chloride was of great service in preventing serum rashes after subcutaneous injection of diphtheria antitoxin, it was much less successful after intraspinal injection of anti-meningococcic serum. He suggests that this is due to the large amount of serum employed in cerebro-spinal meningitis, and that its absorption is more rapid after intra-spinal administration. J. D. ROLLESTON.

SIMPLE EXPLANATION AND RE-EDUCATION AS A THERA- (661) PEUTIC METHOD. E. W. TAYLOR, *Journ. of Abnorm. Psychol.*, June-July 1909, Vol. iv., p. 120.

TAYLOR points out the value that this simple procedure has in the treatment of the neuroses, false points of view and erroneous ideas on the part of the patient being explained and corrected by the physician. His statement (p. 122) that "to search the mind of the individual for the source of his discomfort . . . is surely available for practitioners of no special education in this field" is certainly open to adverse comment. ERNEST JONES.

THE THERAPEUTIC VALUE OF HYPNOTIC SUGGESTION. (662) F. H. GERRISH, *Journ. of Abnorm. Psychol.*, June-July 1909, Vol. iv., p. 99.

GERRISH gives a clear account of the methods of inducing hypnosis, explains away some of the common erroneous views and superstitions concerning it entertained by both the laity and the medical profession, and extols its value. He shortly narrates instances in which he has obtained good results by employment of it. ERNEST JONES.

THE PSYCHOTHERAPEUTIC VALUE OF THE HYPNOIDAL (663) STATE. BORIS SIDIS, *Journ. of Abnorm. Psychol.*, June-July 1909, Vol. iv., p. 151.

SIDIS describes again the method of treatment that consists in inducing a hypnoidal (*i.e.* light hypnotic) state, and in thus releasing potential subconscious reserve-energy, of which the patient has been unable to make use. He shortly narrates a number of cases, including some of dipsomania, in which he has in this way obtained good results. ERNEST JONES.

PSYCHO-ANALYSIS IN PSYCHOTHERAPY. ERNEST JONES, (664) *Journ. of Abnorm. Psychol.*, June-July 1909, Vol. iv., p. 140.

AN account is here given of the principles and aims of Freud's psycho-analytic method of treatment. As it is the first account in English of this valuable method, those who are interested to learn of it are referred to the original. It is based on the knowledge that psycho-neurotic symptoms owe their origin to a conflict between different groups of ideas that cannot be brought into harmony with each other. The less acceptable mental trend cannot be assimilated by the personality and is submerged or "repressed." The repressed complex then takes on an automatic existence, and acts as an irritating foreign body. The symptoms are distorted manifestations of submerged desires. The treatment consists in reaching these buried complexes by means of a special and very elaborate technique, and thus enabling the patient to discover and appreciate the significance of the mental process by which the symptom has arisen. The results obtained by the treatment surpass those obtained by simpler methods chiefly in two respects—in their permanence and in their prophylactic value for the future. Suggestion acts merely by temporarily blocking the particular outlet (*i.e.* the symptom) for the underlying mental trend; psycho-analysis cures by revealing this trend and thus assimilating it to the rest of the personality.

AUTHOR'S ABSTRACT.

THE PSYCHOLOGICAL PRINCIPLES AND FIELD OF PSYCHO-(665) THERAPY. MORTON PRINCE, *Journ. of Abnorm. Psychol.*, June-July 1909, Vol. iv., p. 72.

THIS is an account, of a general nature, of the psychological principles on which psychotherapy rests. Prince groups them under five main headings: (1) formation of emotionally-toned complexes; (2) conservation of mental experiences; (3) dissociation, or disaggregation, in which certain mental processes are split off from the main body of personality, and become inaccessible to introspection; (4) automatism, whereby various unconscious mental complexes evince an independent activity, and lead to different, often pathological, manifestations; (5) emotional energy, the activity of which depends on the "synthetization" of the various mental processes.

He briefly mentions the varieties of psycho-therapeutic procedures, and lays emphasis on the fact that the psychological mechanisms in disease follow the same fundamental rules as in health. ERNEST JONES.

THE TREATMENT OF FATIGUE STATES. G. A. WATERMAN,
(666) *Journ. of Abnorm. Psychol.*, June-July 1909, Vol. iv., p. 128.

AFTER making some remarks on the nature both of physiological and of psychical fatigue, Waterman gives a description of psychopathological fatigue, and discusses the treatment of it. He advocates Dubois' method of persuasion, by which a conviction of recovery is forced into the patient's mind. ERNEST JONES.

PSYCHOLOGY OF THE MORPHIA HABIT AND ITS TREATMENT. (Etude psychologique sur l'habitude de la morphine et son traitement.)
(667) JENNINGS, *Journ. des Prat.*, Sept. 11, 1909, p. 579.

THE majority of writers take the habitual use of morphia as constituting morphiomania, having as its consequence morphinism, a state of inevitable physical degeneration, in which intelligence and health go to ruin at the end of one or two years. Exceptional cases seen in hospitals being taken as typical, an exaggerated description is often given, a description which really applies to subjects who have either been originally unstable or who have added a morphia habit to some other intoxication already present. In such cases one is dealing not with cases of morphiomania pure and simple, but with a more complicated mental malady in which the abuse of morphine is but one of the symptoms.

In a mentally sound individual morphine causes an increase of mental and physical activity. The patient is consequently under the temptation to abuse the drug and become a "morphinophile," and so find himself on the border of "morphiomania." The patient may make the dangerous discovery that when the effects of morphine have begun to tell on the intellectual powers, alcohol will restore the balance. The majority of the devotees of morphine, pure and simple, find that excess destroys the pleasure of the habit. Morphine in the long run establishes a habitual servitude, not impulsive or intermittent, as is the case in dipsomania, but continuous and irresistible, which can only be overcome by long and persevering treatment which is dependent on certain conditions. This bodily need, so imperious, necessitates the employment of constant daily doses; but in the class of patients under consideration the sound mental condition and self-control master the tendency to excess. The general health is less affected than it is in alcoholic cases. But the daily need of the stimulant to preserve a condition of health becomes at length intolerable, and escape from this artificial paradise is sought by every normally constituted person.

There are three leading methods of treatment:

1. *Sudden or rapid withdrawal of the drug, with sequestration of the patient*—a method involving terrible suffering. It cannot be recommended.

2. *Hypnotism and hypnotic suggestion.* These are means of treatment very useful in true morphiomania. The psychic morphiomania may perhaps by hypnotism be reduced to a condition of "bodily obsession." The patient is brought into the category of a simple devotee of morphia, and desires to be cured. He now belongs to the class to which the method of treatment the author favours can be applied.

3. *Gradual diminution without constraint—relief of suffering by therapeutic and physiological means in accordance with bodily indications present—re-education of impulse.* The patient, having been brought to recognise the necessity of breaking the habit, endures stoically the *ennui*, *malaise*, and minor sufferings attendant on the cure, but is spared the severe sufferings attendant on sudden withdrawal. For patients of the type under consideration cure without constraint can be effected, when it is desired by the patient. The physician must, of course, possess his confidence.

A. HILL BUCHAN.

THE PSYCHIC TREATMENT OF ALCOHOLIC INTEMPERANCE, (668) BASED ON A PERSONAL EXPERIENCE OF 1000 CASES.

JOHN D. QUACKENBOS, *Med. Press and Circ.*, Sept. 15, 1909, p. 292.

IN this lecture this author discusses the treatment of the drink habit by hypnotic suggestion. The phenomena of suggestion are explicable on the theory of simultaneous self-manifestation in two worlds of consciousness: the objective or supraliminal—the world of everyday waking life; and the subjective or subliminal—the world of sleep. The latter is what constitutes the true or inner man. The possibilities of psycho-dynamic control of the objective by this higher self are practically boundless, and hypno-suggestion is the establishment of such control. Diseases which are not organic are curable by appeal to this subliminal self which orders organic life. Further, all attributes of the objective mind are controllable and alterable by this higher personality. Suggestion is a straightforward appeal to this personality. The craze for intoxicants is responsive to treatment by suggestion, many popular drink cures being merely suggestion cures, the drugs administered having no peculiar virtue.

The author proceeds to emphasise the seriousness of the great increase in the use of stimulants, especially among women, which is at present going on in America. He notes the evil attendant on the use of patent medicines containing alcohol. The alcoholic beverages themselves are largely adulterated with a variety of ingredients more or less tonic. Properly matured ethyl alcohol, itself a protoplasmic poison, is hardly obtainable in American bar-rooms. Amylic alcohol is the common " whiskey " of trade.

Examples are given of treatment of inebriety by suggestion. One case has experienced no desire for alcohol since his first *séance* six years ago. The suggestion was made that he should no longer deceive himself with the thought that he could safely take one drink and then stop, but that it was impossible for him ever to want a drink or ever to take drink for any conceivable reason. This patient has abstained not through conscious effort but by disinclination, conditioned by subpersonal control. Forced feeding may be a necessary part of treatment. It may be essential to forbid the use of tobacco, which by depressing the nerve centres creates a demand for its antidote (whiskey), and is the explanation of 75 per cent. of all cases of methomania.

Periodic drinkers should be treated just before the close of the cycle of sobriety. There is often apparently a relationship between the abuse of tobacco and the oncoming of the irresistible thirst, while the depressing effects of nicotine suggest recourse to stimulants. Periodic drink-storms are usually preceded by irritability of temper or other nervous phenomena, and immediately on the appearance of these symptoms the patient should be treated by suggestion. He is conducted into the subliminal sphere and assured that according to his own desire he has lost all craving for alcohol, that it is now repugnant to him, and that he cannot carry it to his lips. A *sine quâ non* of success is an honest desire on the patient's part to reform. Sometimes a presentation of the dire effects of alcoholism may be made the basis of an appeal to the patient and arouse a desire for cure.

It is not claimed that the tendency to relapse is entirely done away with by suggestion. Hypnotic suggestion cannot, of course, effect a cure where organic changes have been produced.

The author is in the habit of administering phospho-glycerates for six months or a year in alcoholic cases. Of 1000 cases treated by suggestion methods during a period of ten years, between 80 and 90 per cent. have been restored. A. HILL BUCHAN.

SURGERY OF THE HYPOPHYSIS. (Zur Frage der Hypophysis (669) Operation.) L. LÖWE, *Deutsche med. Wchnschr.*, 1909, No. 40, S. 1754.

LÖWE, who formerly was an advocate of the intra-nasal route for approaching tumours of the pituitary body, now describes a new method, which, however, he appears to have practised only on the cadaver. This method has the advantage of avoiding all facial deformity and of leaving the nose uninjured. The incision is made over the hyoid bone and parallel to it. The mylohyoid and geniohyoid muscles are then divided in the line of the original incision. Thus the pharynx is opened from the front. On dividing the anterior wall of the pharynx the whole cavity is exposed, from the pharyngeal fornix down to the opening of the pharynx, including the choanæ and the openings of the Eustachian tubes.

The mucosa of the pharyngeal fornix, together with the fascia of the pharyngeal wall, is now divided in a sagittal direction and the two sides drawn apart. The lower wall of the sphenoidal sinus is thereby exposed. This is removed, and the operator reaches the bone which covers the under surface of the hypophyseal tumour. The above operation is claimed by Löwe to be simpler and less dangerous than the intra-nasal route. He even suggests that it might be accomplished under a local anæsthetic (!).

PURVES STEWART.

Reviews

MODERN PROBLEMS IN PSYCHIATRY. By ERNESTO LUGARO, Professor of Psychiatry, University of Modena. Translation by DAVID ORR and R. G. ROWS. Manchester: Sherratt and Hughes, 1909. 7s. 6d.

THE esteem in which Professor Lugaro is held among alienists, as an accurate and accomplished investigator and prominent exponent of psychiatrical problems, will be an inducement to a wide circle to peruse this volume. It is no exaggeration to say that one rises from its reading with increased enthusiasm and manifest profit.

The author's preface explains the scope of the book. It is an attempt to point out the psychiatrical programme of the work of to-day and to give some hint regarding the programme of to-morrow.

An interesting foreword by Dr Clouston gives added value to the volume, which is well printed in clear type. The translation is felicitous and smooth.

In a general introduction Lugaro traces the history of psychiatry, points out the difficulties of the problems connected with it, the prejudices which hinder the work of the investigator, and the wide knowledge necessary for research. The author justifies a many-sided activity displayed by young alienists at the present time. He holds that though it sometimes carries with it the reproach of studying everything except psychiatry, and of analysing everything save the patient, the mere study of psychiatry, of diseases of the mind, although necessary, is of itself futile and sterile. Alienists are bound to leave their own field, fashion and solve for themselves their own special problems in the other sciences; only in this way can they contribute to the creation of a complete psychiatry.

An interesting and enlightening chapter is that concerned with psychological problems, in which several fields of research are pointed out, particularly that relating to aphasias and kindred disorders. These subjects have been studied largely from the anatomico-pathological point of view, and have so widened our conception of the mechanism of language as to give rise to an urgent necessity for a more thorough analysis in the field of psychological examination.

The results and suggestions gained by purely anatomical studies form perhaps the most striking chapter in the book. If our anatomical knowledge was complete, we could deduce from the structure of a brain not only the size, form, and structure of the animal to which it belonged, but also the environment in which the animal lived, its habits, and the activity it was capable of exhibiting. A short summary of the history of the conception that the brain cortex is the particular organ of psychic activity is given. The author pays much attention to Flechsig's experiments and researches. It seems, however, to have escaped his notice altogether that much of importance has been done in this particular field by Campbell and Shaw Bolton.

The anatomical problems connected with psychiatry are twofold: (1) Normal morphological data are required; (2) objective demonstration of the changes in nutrition which affect the nerve elements, and which depend on causes absolutely analogous to those usually injurious to the functional and anatomical integrity of every other organ of the body is necessary.

The future of pathogenetic work is mainly concerned with an attempt to make a fundamental distinction between primary and secondary mental disturbances, and their relation to coarse circumscribed destructive lesions and microscopical destructive lesions of the cerebral cortex and their effects.

In a chapter devoted to the discussion of etiological problems, much attention is given to toxic and toxæmic conditions, although the author passes in review all the determining factors in insanity, including psychic and social causes, predisposition and anomaly, degeneration and heredity. In relation to heredity, Weismann's theory, Darwin's theory of pangenesis, Galeotti's theory of the Lamarckian factor are dealt with seriatim.

Multifarious classification has disturbed the author, as it has influenced every other alienist who has put pen to paper. Anxious to have a physio-pathological interpretation of mental syndromes, he is conscious of the gulf which separates these from ordinary disease conditions; at the same time he recognises the important work that alienists have been doing of late years in this particular field, especially that of Tanzi in infantile cerebropathy. No doubt in Lugaro's opinion a difference in symptomatology may suggest that research should be made for corresponding differences in the fields of pathogenesis and etiology, in the same way that differences in anatomico-pathological findings may direct attention to symptomatic differences which had previously escaped notice. Morbid pictures gradually become better defined when they are based, not on psychological observation only, but when the close affinity of the origin of mechanism which obtains in the most diverse syndromes is recognised.

The practical problems which, with a slight concluding note, complete the work, consist mainly of an argument on the duties of civil society to protect those suffering from mental disease, to maintain on a high plane the bonds of social unity of interests against misfortune, and to respect every feeling of sympathy which constitutes the integral part of that treasure of altruistic feelings, and without which no society could continue in progress. With respect to the treatment of the insane, Lugaro holds that the asylums most badly managed are those of Belgium and Spain, which are governed by priests. In the asylum at Cienpozuelas, near Madrid, administrated by monks and nuns, there is only one doctor, who is not an alienist, and who must limit his attention to the treatment of pneumonia, enteritis, and other intercurrent diseases, while the priests provide for the treatment of mental aberration by using every means of coercion known to man. As regards the régime of asylums, and still more with reference to the prophylaxis of insanity and of crime, and the treatment of criminals, any future development must necessarily be the concern, not only of the alienist and of the general practitioner, but of all society. HAMILTON C. MARR.

A TEXT-BOOK OF MENTAL DISEASES. EUGENIO TANZI, Professor of Psychiatry in the Royal Institute of Higher Studies, Florence. Translation by Drs FORD ROBERTSON and T. C. MACKENZIE. London: Rebman, Ltd., 1909. 24s.

WITHIN the last year or so, two important works on Psychiatry translated from the Italian, have been issued. This, the third, is no less important than its precursors. In a preface the translators point out the omission of one chapter and a section of another. The omission is not important, as the parts omitted dealt in the original edition exclusively with the subject of Italian asylums.

It may be conceded at the outset that the author has attained in this work the two conceptions with which he sets out—a clear and original enunciation of practical measures and much assistance to the idealist in the search for the attainment of his ideals. After a slight historical sketch, the several data which have led to the positive evidence of the existence of mental centres in the association areas of the brain are clearly set forth. The work done by English observers in this respect, and in recent years, is overlooked. This is more remarkable in view of the fact that the work of at least one of these observers has received the imprimatur of the Royal Society.

The chapter on Etiology groups the causes of mental disease under two headings—external and internal. To the latter term are limited conditions which simply predispose to mental disease or even to a definite form of mental disorder. The anatomical substratum of mental disease is a practical and interesting exposition and up-to-date summary of their macroscopical, microscopical, extracortical and extracerebral morbid conditions.

The analysis of the sensations, which, by the way, are under the heading of the term "sensibility," is full and minute, and, like idealism, memory and the sentiments, movements and external reactions receive careful consideration in the special chapters devoted to them.

An important discussion on the classification of the insanities is followed by the author's acceptance of a classification of his own which is deserving of merit, especially with regard to encephalopathies. These are sub-divided into infantile and adult cerebropathies, the former including idiocy (acquired) and the latter cerebral tumours, head traumatism, cerebral syphilis, apoplectic dementia, and senile dementia. Hereditary imbecility or intellectual feebleness is considered under "Degenerative Mental Anomalies." From what has been noted, this classification, like all others, is subject to criticism, syphilitic affections, according to some, being more naturally grouped under toxic infections. At the same time, the distinction between gross cerebral lesions and those subtle conditions underlying imbecility is a far-reaching advance.

In the consideration of clinical phenomena, as is natural in a work of this kind, pellagra receives full and adequate treatment. In regard to the etiology of progressive paralysis, Tanzi accepts the view that the great majority of cases are the results of syphilis. The translators add to the value of the general discussion on the etiology of this affection by giving a note on the results of investigations carried out in the laboratory of the Scottish asylums. A final chapter on asylums completes this work.

Author and translators alike are to be congratulated, the former for the stimulus and impetus this important work is sure to have on psychiatrical problems, and the latter for the lucid, bright, and happy translation and the onerous labours which have brought it under the purview of the English-speaking public interested in the problems of mental disease.

HAMILTON C. MARR.

MIKROSKOPISCH-TOPOGRAPHISCHER ATLAS DES MENSCHLICHEN ZENTRALNERVENSYSTEMS, MIT BEGLEITENDEM TEXTE.

Zweite vermehrte und verbesserte Auflage. Dr OTTO MARBURG. Leipzig und Wien: Franz Deuticke, 1910. 14s.

WE congratulate the author on the appearance, after six years, of the second, enlarged and improved edition of his valuable Atlas. It consists of thirty-four plates, drawn after the originals by an accomplished artist, who has reproduced them with great fidelity and with great beauty. The illustrations of the spinal cord do not correspond to all the segments, but the most important ones in the cervical and lumbo-sacral enlargements and representative ones of the thoracic region are included. Those of the brain comprise horizontal and transverse sections of the mid and hind brain, and sagittal, frontal and horizontal sections of the cerebrum, as well as three sections of the cells of the cortex in the anterior central, first temporal and cuneate lobes, and three from the same convolutions, showing the distribution of the fibres by Weigert's method.

The work will be found of the utmost value in every neurological laboratory. It well deserves the commendations of Professor Obersteiner in his preface. ALEXANDER BRUCE.

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